

# TEXAS ASTHMA BURDEN REPORT

A Report From The Texas  
Asthma Control Program

April 2007



TEXAS  
Department of  
State Health Services

*A* TEXAS  
Asthma Control Program ★

# **The Burden of Asthma in Texas 2000-2005**

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# **The Burden of Asthma in Texas 2000-2005**

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# Introduction

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## The Burden of Asthma in Texas

Asthma is a chronic lung disease characterized by inflammation, which refers to the swelling of the inner lining of the airways thus narrowing the air passage, bronchoconstriction, which is the tightening of the muscles surrounding the airways, and increases in the production of mucus. Asthma is a widespread public health problem that has increased in the past two decades in the United States (U.S.) and Texas.

In 2006, according to the National Center for Health Statistics (NCHS), an estimated 24.3 million (11.0%) of the adult U.S. population had self-reported lifetime asthma and 16.1 million (7.3%) had self-reported current asthma. 2005 hospitalization data show that the asthma hospitalization rate was 16.6 per 10,000 U.S. residents, accounting for more than 491,000 hospitalizations. There were a total of 3,884 asthma related deaths in the U.S. for the same year with a mortality rate of 1.3 per 100,000 residents.

In Texas, asthma remains one of the most prevalent chronic diseases and growing health concerns. In 2006, according to the Texas Behavioral Risk Factor Surveillance System (BRFSS), an estimated 2.1 million (12.4%) adult Texans (18 years of age or older) had self-reported lifetime asthma and 1.3 million (7.3%) adult Texans had self-reported current asthma. Asthma affects more children than any other chronic disease<sup>1</sup> and is one of the most frequent reasons for hospital admissions among children. The BRFSS indicates that there were an estimated 854,000 (13.4%) children (0-17 years of age) with reported lifetime asthma and 599,000 (9.4%) children with reported current asthma. Given the large numbers of affected Texans, asthma results in major economic and social burdens. The asthma hospitalization rate for Texas in 2006 was 11.0 per 10,000 Texas residents, accounting for more than 25,000 hospitalizations and \$391.5 million in total hospital charges. From 1999 to 2005, there were a total of 1,831 deaths in Texas due to asthma with a mortality rate of 1.39 per 100,000.

The mission of the Texas Asthma Control Program is to decrease asthma morbidity and reduce the social and economic impact of asthma. Along with many partners across the state who have a common vision for asthma health, we seek to reduce the severity of asthma symptoms, and decrease the number of emergency department hospital visits and deaths due to asthma through education and awareness campaigns.

Asthma has a major impact on the health of the population and the burden falls disproportionately on some populations. Monitoring trends in asthma morbidity and mortality among Texans is important for increasing the level of knowledge about this highly prevalent condition. Surveillance data help public health officials focus their

# Introduction

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## The Asthma Burden in Texas

efforts to address asthma by targeting those most in need of intervention.

Data also raise awareness about the effect of asthma on the health of the community. This report documents the magnitude of the problem, and identifies particular communities, settings, and characteristics of the population at risk for developing life threatening episodes of asthma in Texas.

# Demographics

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## The Texas Population

With an area of 268,581 square miles and a population of 22.8 million, Texas is the second largest U.S. state in both area and population. Texas has 254 counties and over one half of them are considered rural. Approximately three million people, or 16% of the population, live in rural areas.

As of 2005, the state had an estimated population of 22.8 million—an increase of 388,419 (1.7%) from the prior year and an increase of 2 million (9.6%) since the 2000 census. In all three subcategories—natural (births minus death), net immigration, and net migration—Texas has seen an increase in population. In August 2005, the U.S. Census Bureau announced that Texas joined Hawaii, New Mexico and California as a majority-minority state. According to July 1, 2004 population estimates, Texas had a minority population of 11.3 million, comprising 50.2 percent of its total population of 22.5 million. (The minority population includes all people except non-Hispanic whites). More than one-third of Texas residents are of Hispanic origin with the majority being Mexican-American. Other Hispanic subgroups in Texas may include, but are not limited to, Puerto Ricans, Cubans, and El Salvadorans.

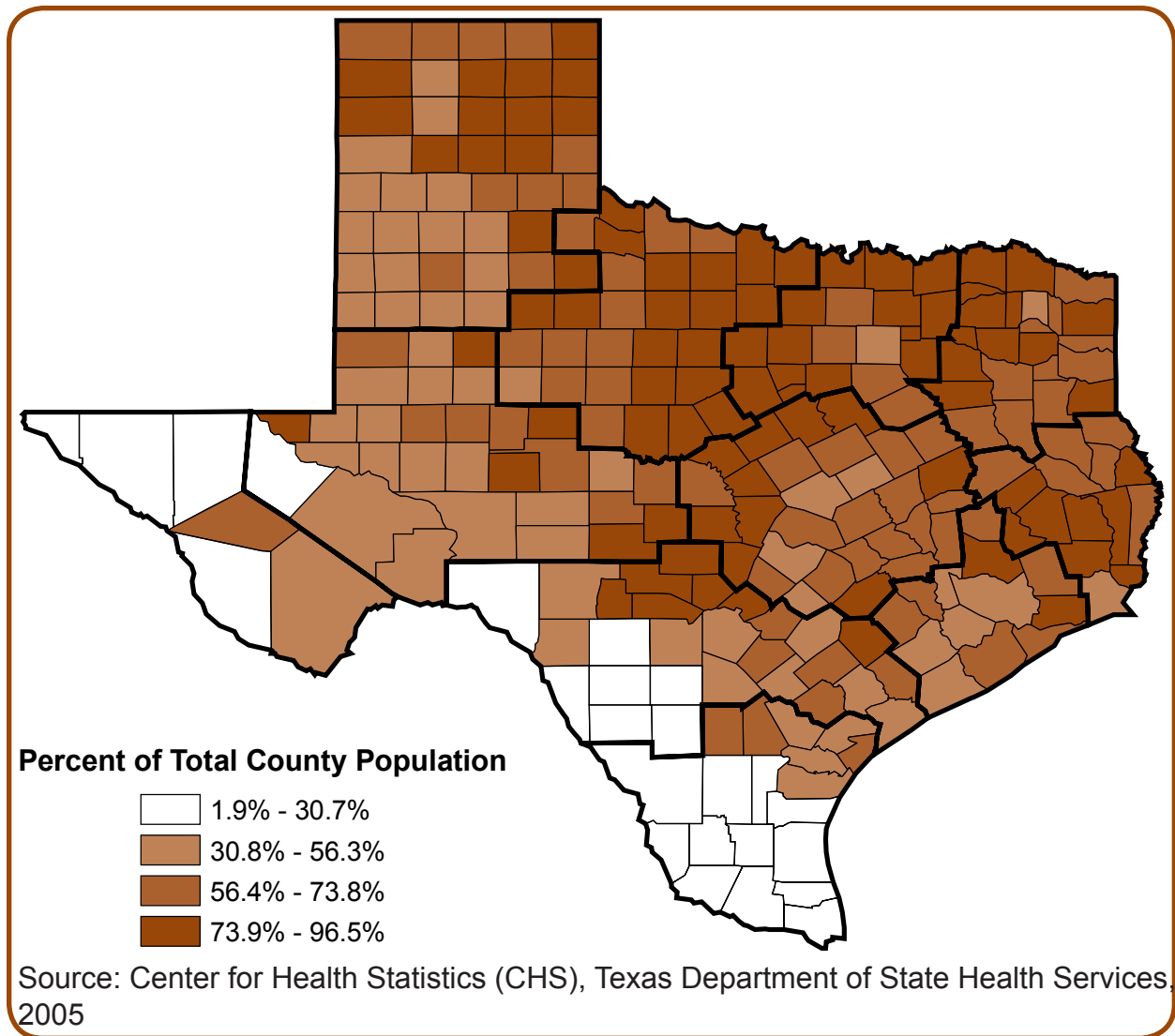
The shifting demographics of Texas are evident when examining age groups by race and ethnicity. According to the Texas Demographer, 71% of Texas residents aged 65 or older are White and 18% are Hispanic. But the demographics shift for the younger generation: 41% of children under age 18 are White and 43% are Hispanic. The trend continues for younger age groups—39% of children under the age of 5 are White and 46% are Hispanic.

Because of the state's vast size, many Texans, regardless of race and ethnicity, who live in less populated areas may be medically underserved and suffer from health disparities. Although a majority of Texans live in urban areas, rural population members are often in need of the same services as those who live in urbanized areas. The challenges for the provision of services within these rural and frontier counties are similar: lack of access to affordable health care, lack of transportation, little or no economic development, limited fiscal resources, and lack of trained professionals.



# Demographics

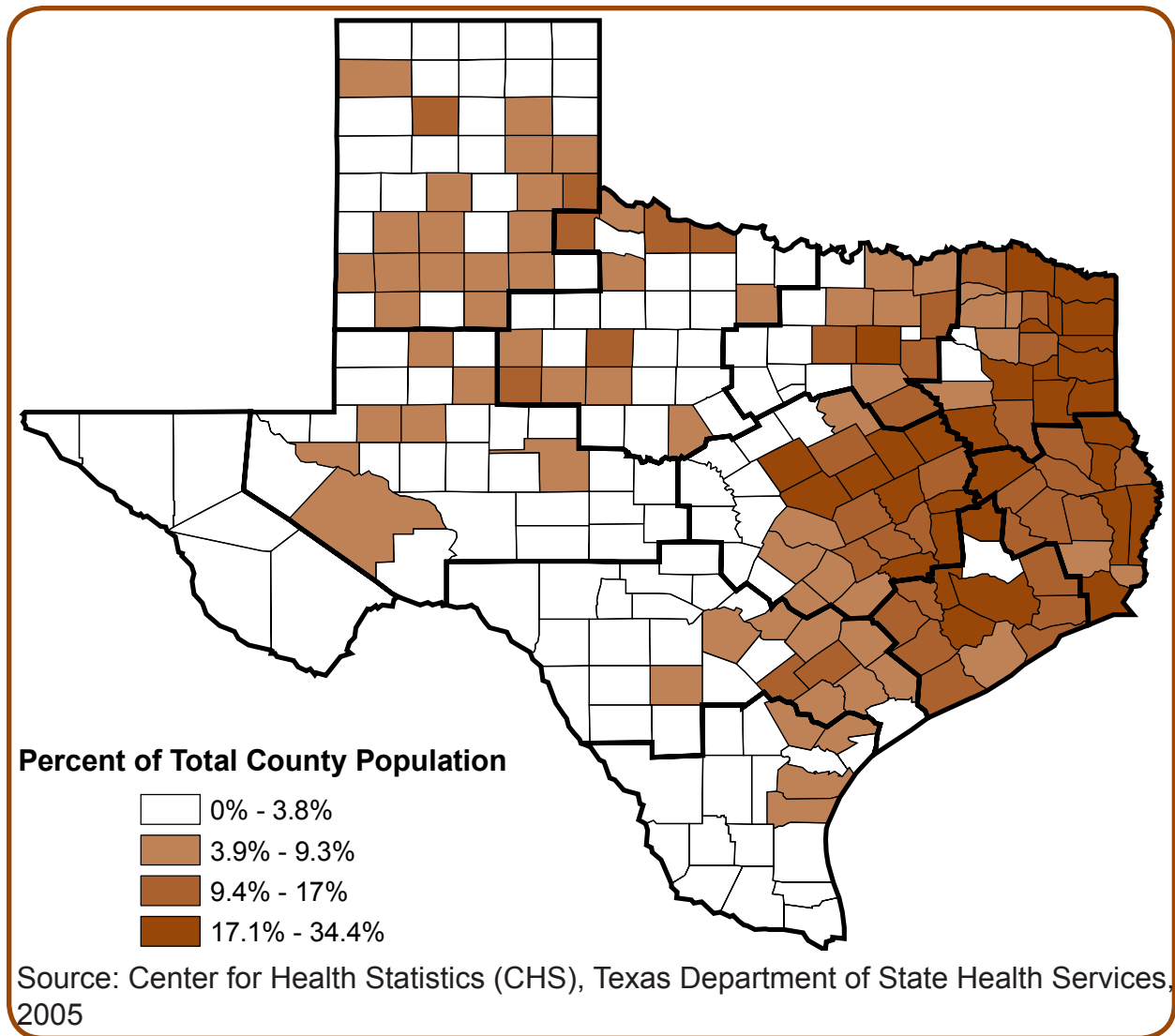
## Race/Ethnicity Groups - Whites



This map shows the percent of county population as of 2005 that are Whites. Most of these Texas counties are concentrated in the northern and central parts of Texas.

# Demographics

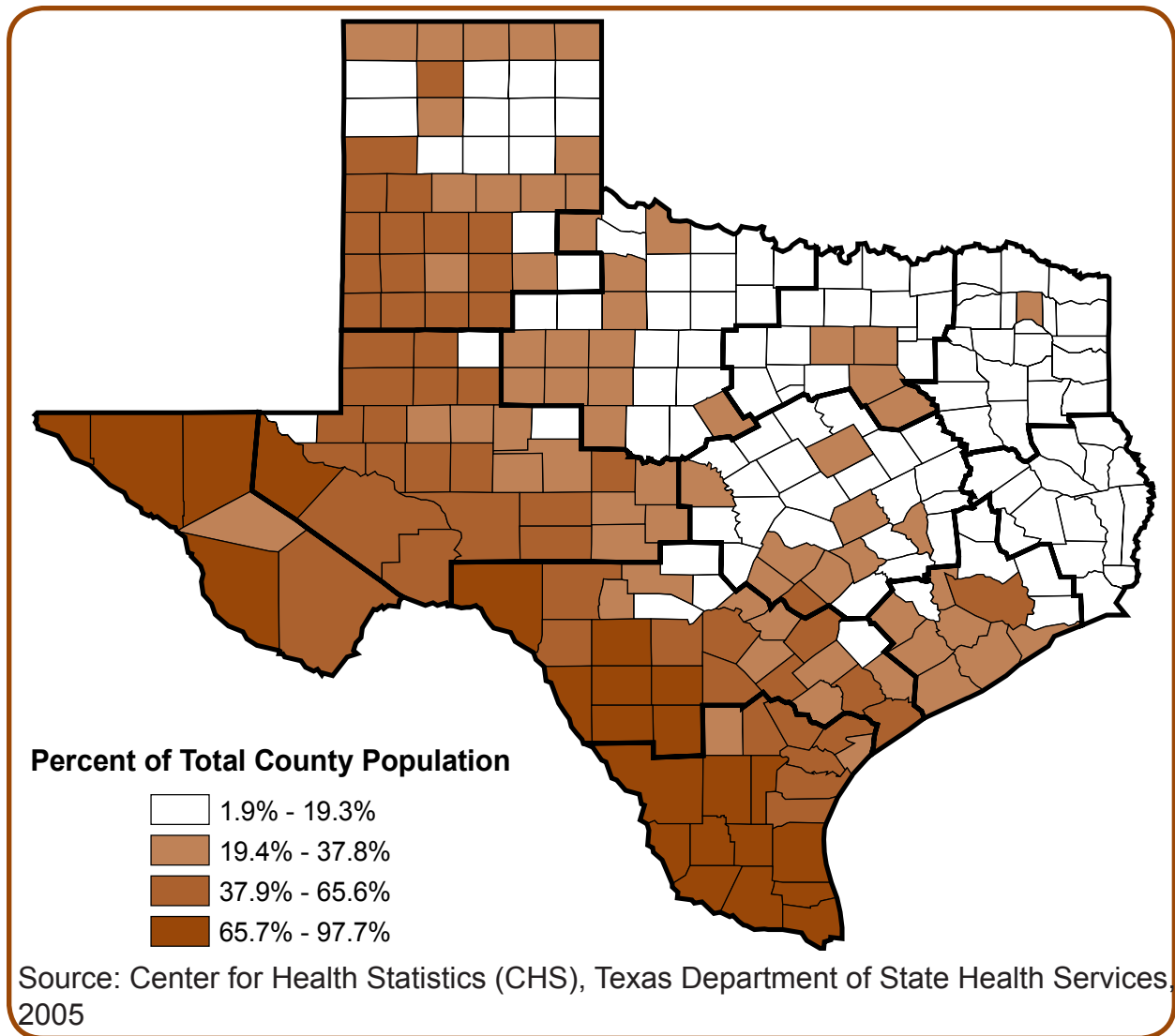
## Race/Ethnicity Groups - African Americans



This map shows the percent of county population as of 2005 that are African-Americans. Most of these Texas counties are concentrated in the eastern part of Texas.

# Demographics

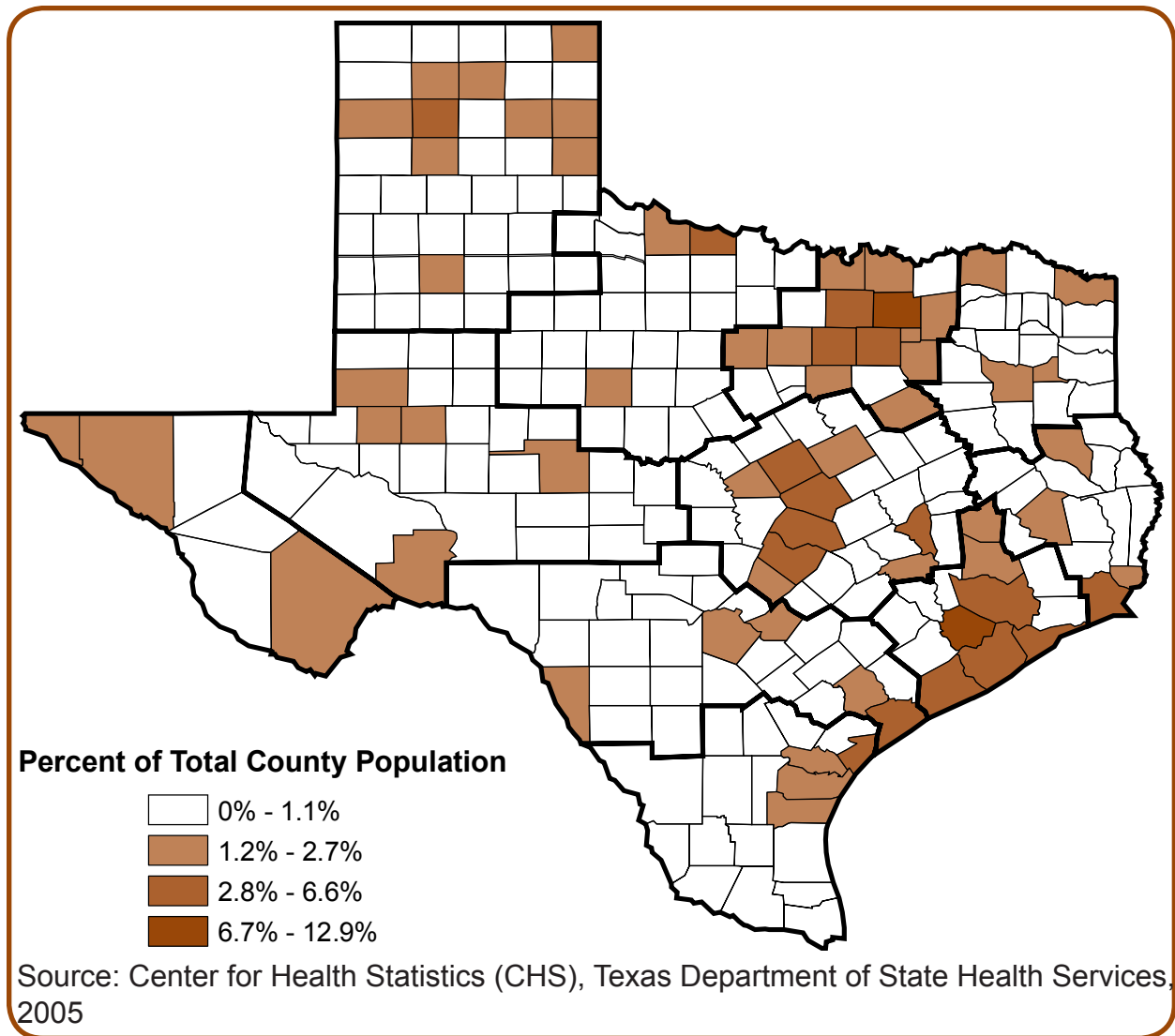
## Race/Ethnicity Groups - Hispanics



This map shows the percent of county population as of 2005 that are Hispanics. Most of these Texas counties are concentrated in the southern and western parts of Texas.

# Demographics

## Race/Ethnicity Groups - Others



This map shows the percent of county population as of 2005 that are Others. Most of these Texas counties are scattered throughout Texas.

# Prevalence

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## Behavioral Risk Factor Surveillance System (BRFSS)

Prevalence is the proportion of people in a population who have a specific disease at a point in time or a given time period. Prevalence estimates are often used to describe the burden of a disease for a given population. Texas prevalence estimates of lifetime and current asthma are based on the self-reported, population-based survey called the Texas Behavioral Risk Factor Surveillance Survey (BRFSS).

The BRFSS is the source of prevalence estimates for a wide range of health behaviors and risk factors for chronic diseases, infectious diseases, and other risk factors for Texas adults. The BRFSS is a statewide random-digit-dialing telephone survey of the Texas adult population aged 18 years and older. Each year, approximately 5,000-6,000 randomly selected adults aged 18 years and older are interviewed by telephone using standardized methods and questionnaires set by the Centers for Disease Control and Prevention. Since 1999, the Texas BRFSS has included two questions for assessing lifetime and current prevalence of asthma.

This section presents data from the 2000 through 2005 Texas BRFSS. Data were analyzed by sex, age, race/ethnicity, education, and income groups.

Lifetime asthma prevalence is determined by respondents who answer “yes” to the following question: “Have you ever been told by a doctor, nurse or other health care professional that you have asthma?”

Current asthma prevalence is determined by respondents who answer “yes” to the following question: “Do you still have asthma?”

In 2005, two questions were added to the Texas BRFSS to determine current asthma prevalence among children.

Lifetime childhood asthma prevalence is determined by respondents who answer “yes” to the following question about the respondents’ child: “Has a doctor, nurse or other health professional ever said that the child has asthma?”

Current childhood asthma prevalence is determined by respondents who answer “yes” to the following question about the respondents child: “Does this child still have asthma?”

Data for children are based on information provided by an adult respondent about the child living in the home. The prevalence of asthma for adults and children are then collected from the survey along with other subgroups. Due to the exclusion of the child’s race/ethnicity question on the 2005 BRFSS survey, descriptive information on the child’s race/ethnicity is not available.

# Prevalence

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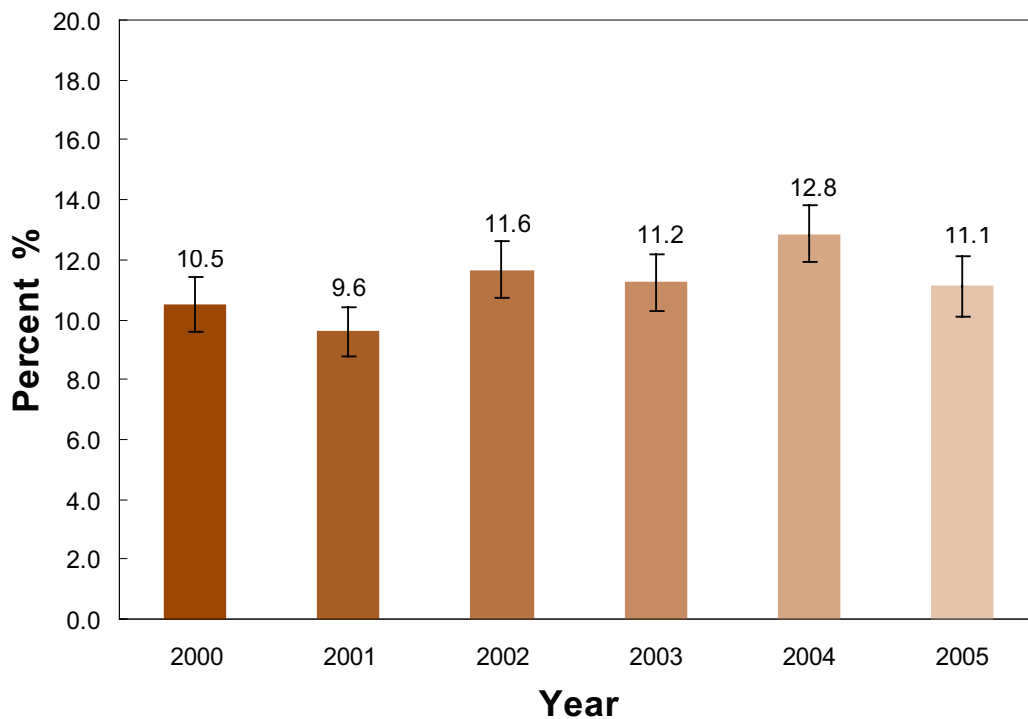
Limitations of the BRFSS data:

The BRFSS estimates are derived from self reported interviews with no verification of having been diagnosed by a health care professional.



# Prevalence

Figure 1. Prevalence Of Lifetime Asthma Among Adults ( $\geq 18$  years), Texas, 2000-2005

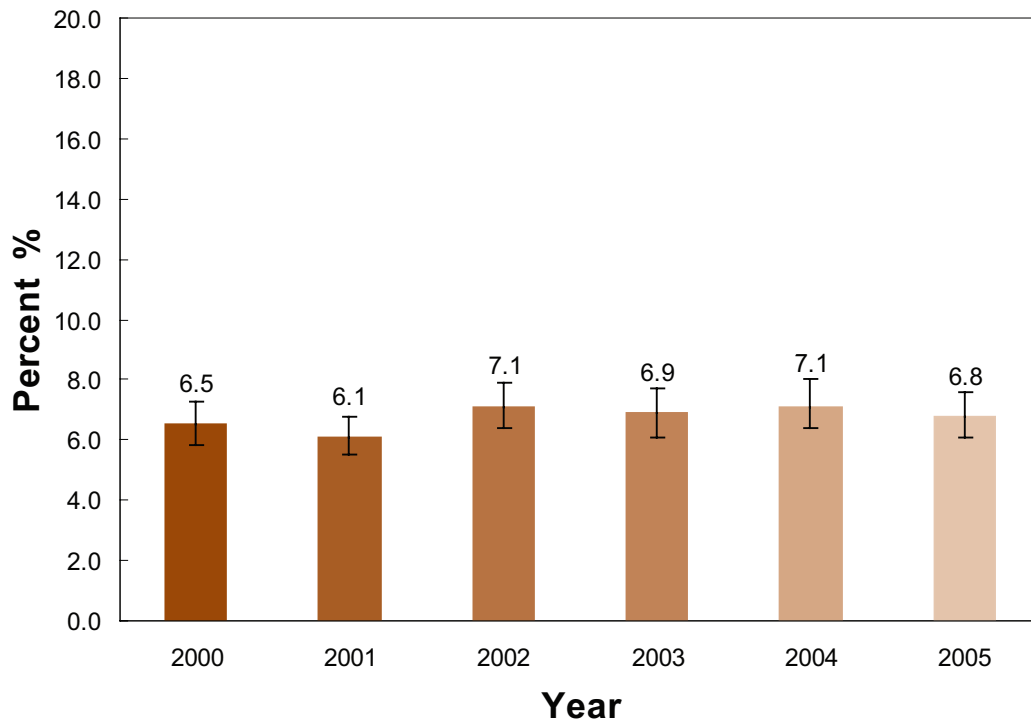


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The prevalence of lifetime asthma in Texas adults ranged from a low of 9.6% in 2001 to a high of 12.8% in 2004.

# Prevalence

Figure 2. Prevalence Of Current Asthma Among Adults ( $\geq 18$  years), Texas, 2000-2005

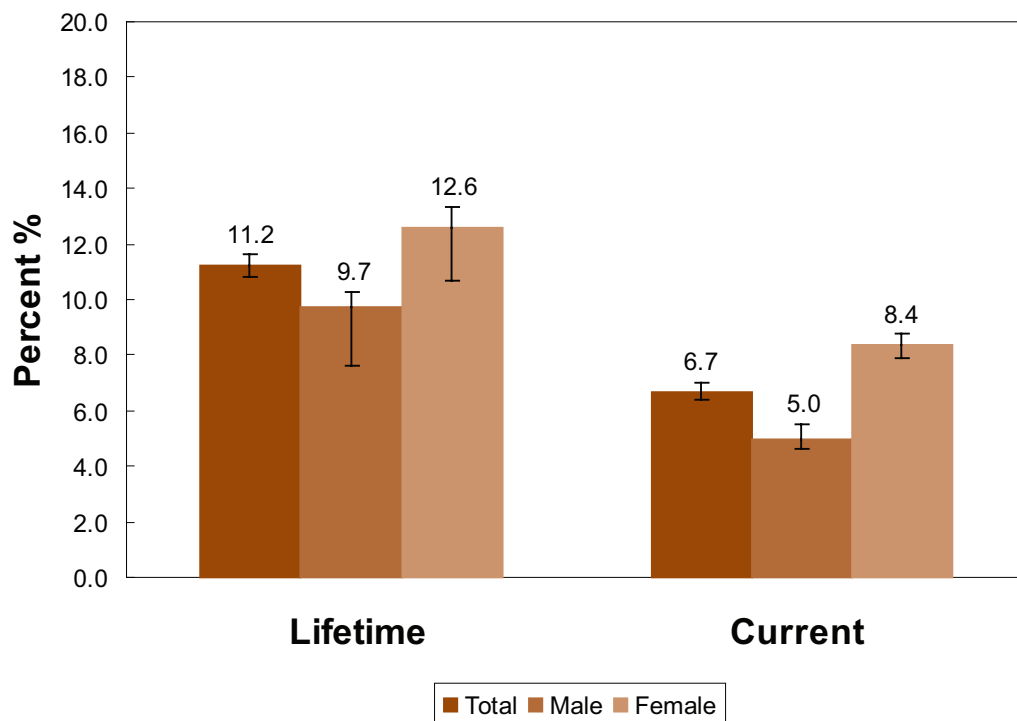


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The prevalence of current asthma in Texas adults ranged from a low of 6.1% in 2001 to a high of 7.1% in 2002 and 2004. There is not a significant trend over the time period.

# Prevalence

Figure 3. Prevalence Of Lifetime And Current Asthma Among Adults ( $\geq 18$  years), By Gender, Texas, 2000-2005

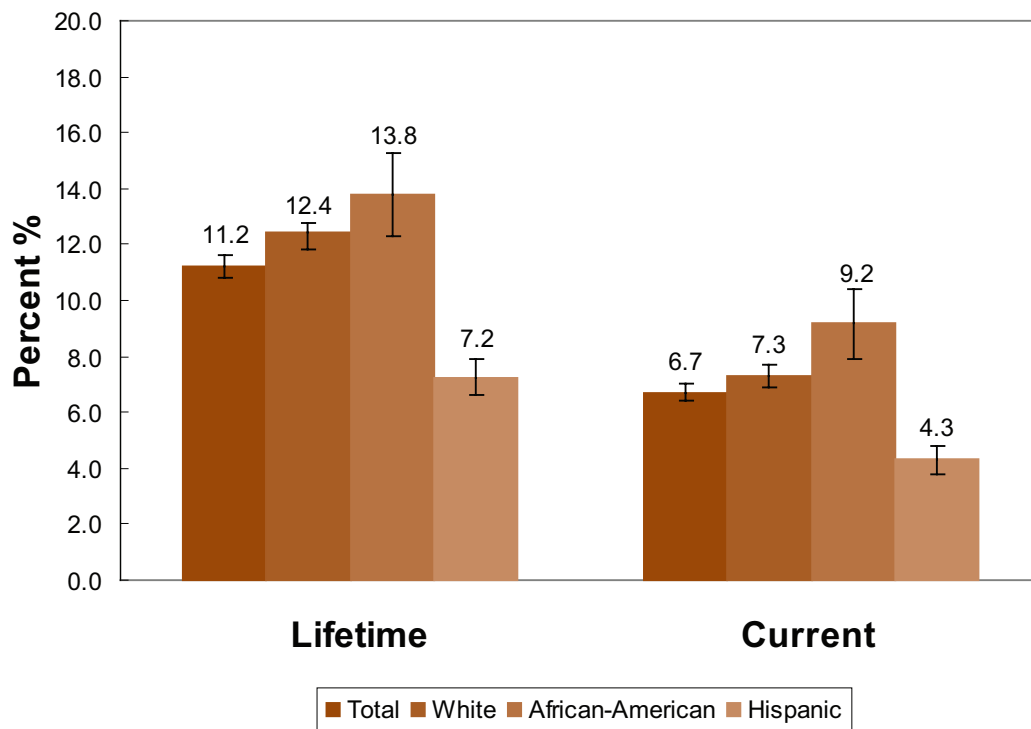


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The prevalence of lifetime and current asthma among adult Texans are significantly higher for females than males ( $p < 0.05$ ).

# Prevalence

Figure 4. Prevalence Of Lifetime And Current Asthma Among Adults ( $\geq 18$  years), By Race/Ethnicity, Texas, 2000-2005

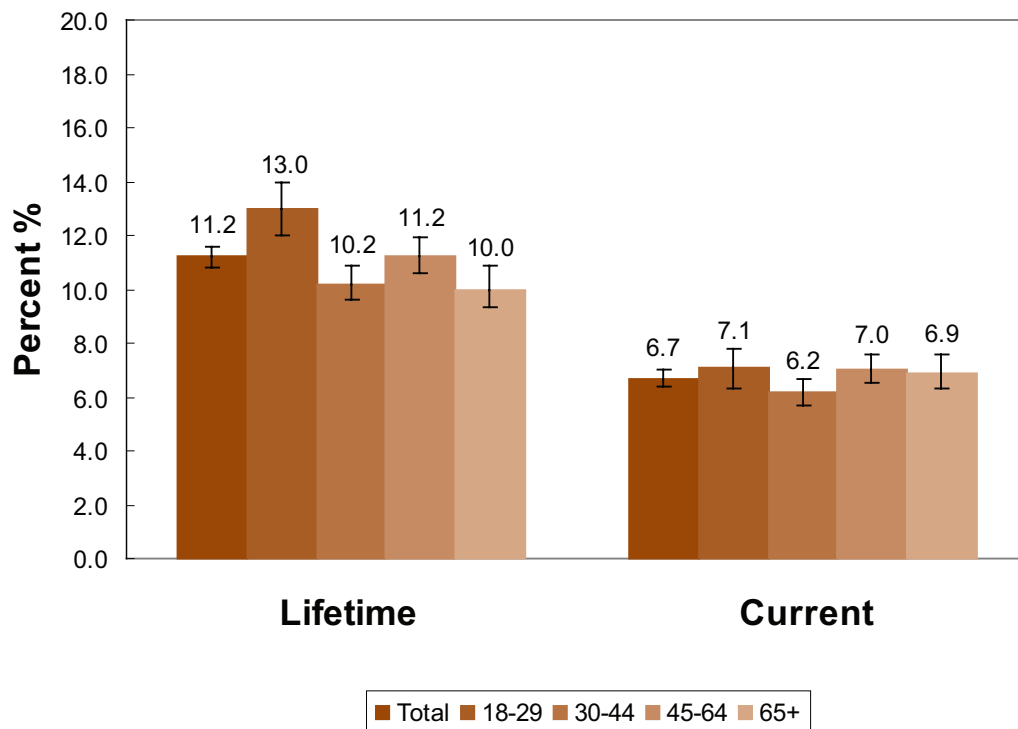


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The prevalence of lifetime asthma is significantly higher for African-Americans (13.8%) and Whites (12.4%) compared to Hispanics (7.2%) ( $p < 0.05$ ).
- The prevalence of current asthma is significantly higher for African-Americans (9.2%) compared to Whites (7.3%) and Hispanics (4.3%) ( $p < 0.05$ ). The difference between Whites and Hispanics is also statistically significant ( $p < 0.05$ ).

# Prevalence

Figure 5. Prevalence Of Lifetime And Current Asthma Among Adults ( $\geq 18$  years) By Age Group, Texas, 2000-2005

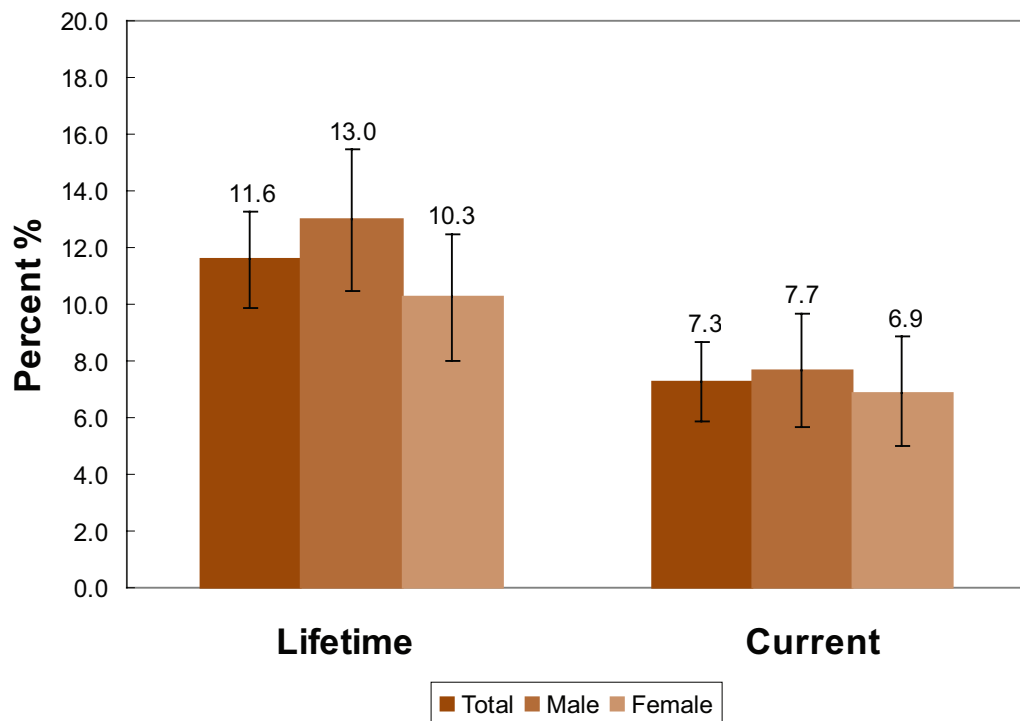


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The 18-29 age group has the highest lifetime asthma prevalence (13.0%) among adults ( $p < 0.05$ ).
- The prevalence of current asthma does not differ significantly by age group.

# Prevalence

Figure 6. Prevalence Of Lifetime And Current Asthma Among Children (<18 years) By Gender, Texas, 2005



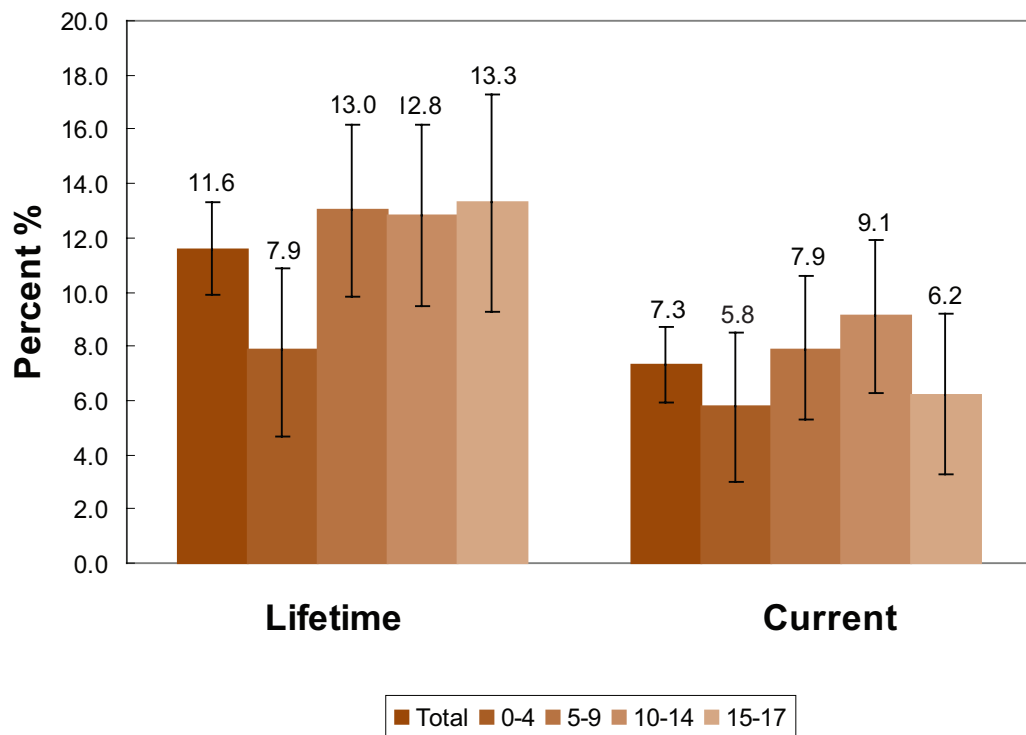
Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- Both lifetime and current asthma prevalence among children are slightly higher for boys but the difference is not statistically significant.



# Prevalence

Figure 7. Prevalence Of Lifetime And Current Asthma Among Children (<18 years) By Age Group, Texas, 2005

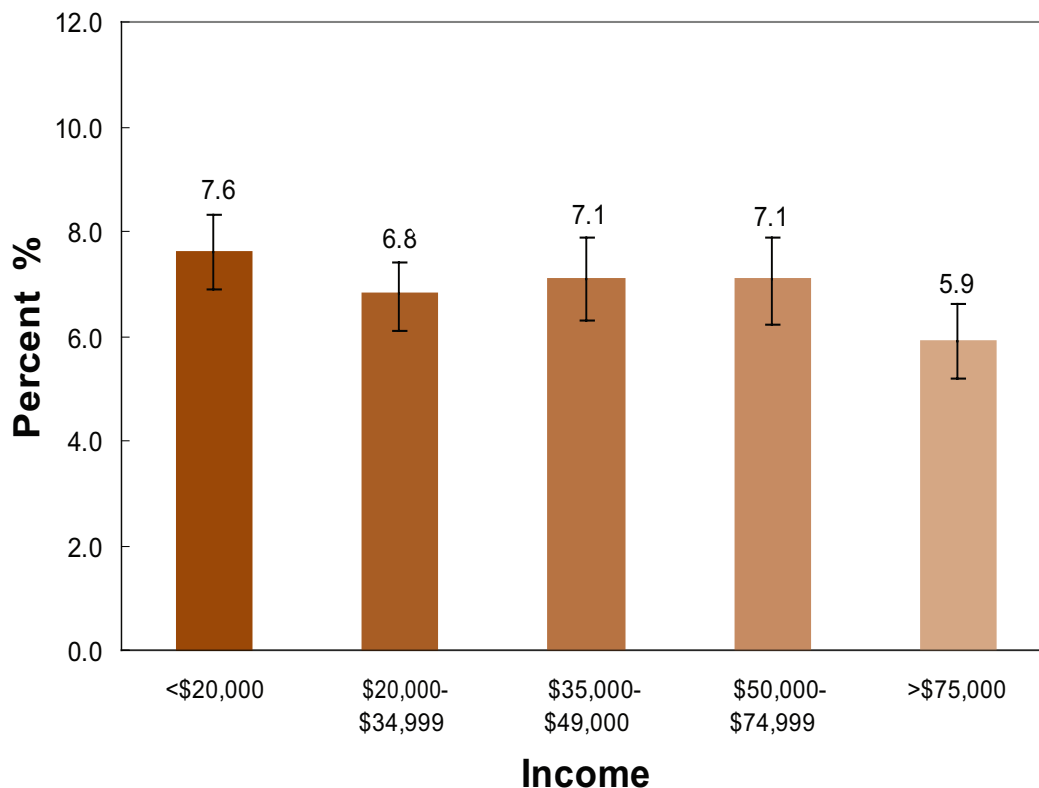


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The 0-4 age group has a non-significant lower prevalence of lifetime asthma compared to the older age groups among children (< 18 years).
- Current asthma prevalence has shown a non-significant increase as the age group became higher, but a decline occurs after the 10-14 age group.

# Prevalence

Figure 8: Prevalence Of Current Asthma Among Adults ( $\geq 18$  years) By Income Level, Texas, 2000-2005

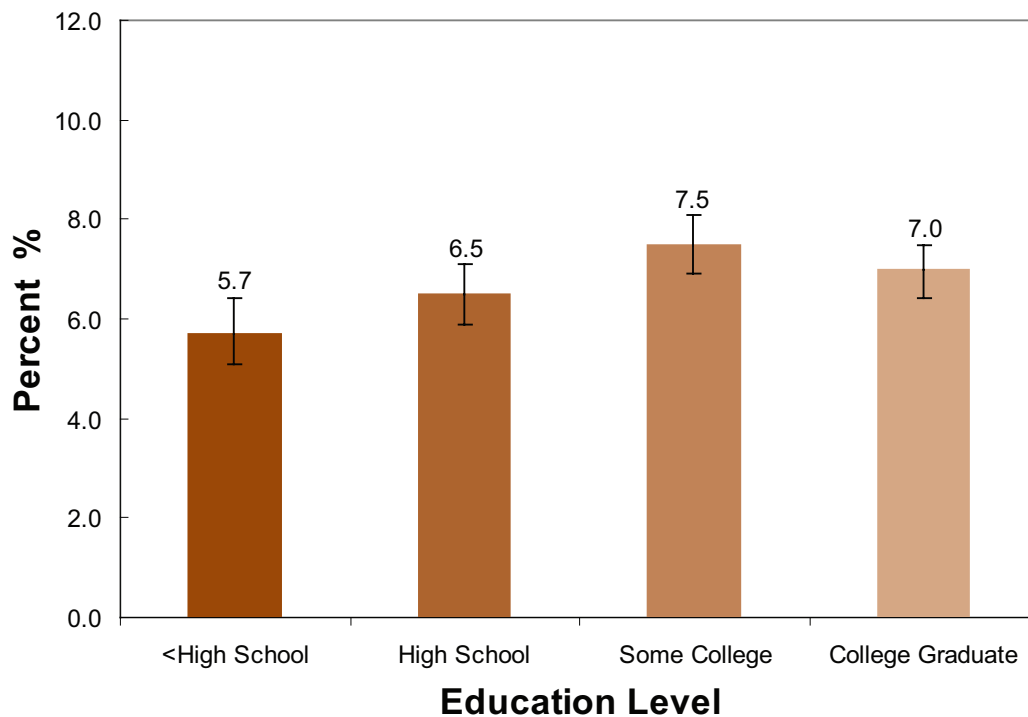


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- Overall, the prevalence of current asthma among adults decreased with increasing household income.
- The prevalence of current asthma among adults is significantly higher for those whose household earns less than \$20,000 than those whose household earns \$75,000 or more ( $p < 0.05$ ).

# Prevalence

Figure 9. Prevalence Of Current Asthma Among Adults ( $\geq 18$  years) By Education Level, Texas, 2000-2005

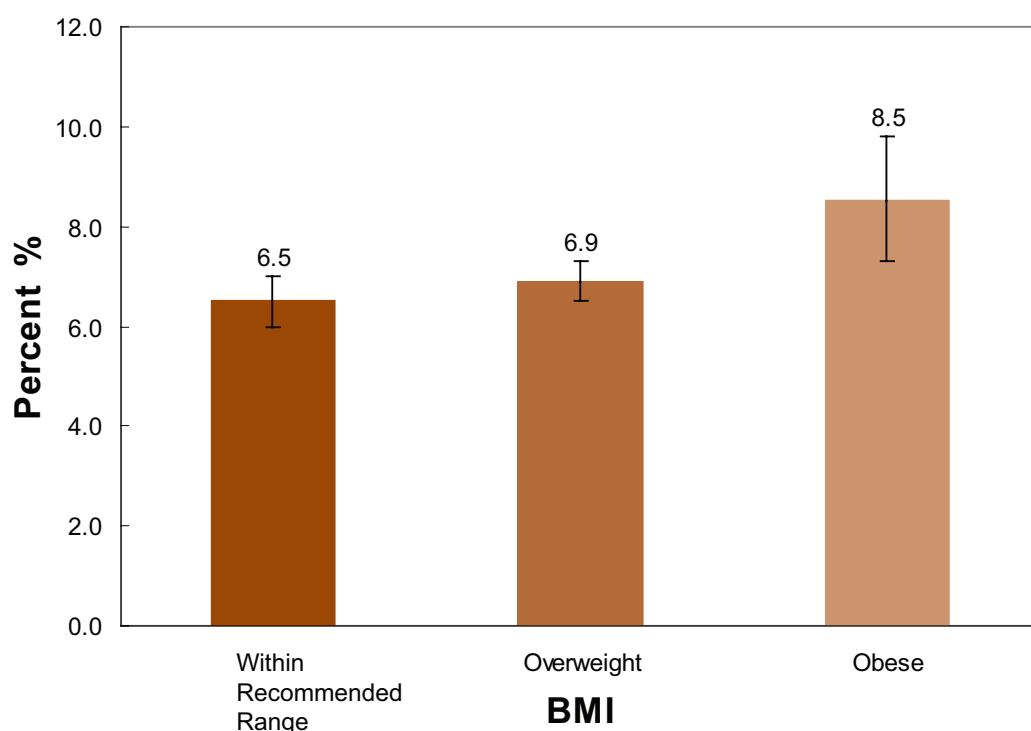


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The prevalence of current asthma among adults varies by educational attainment.
- The prevalence of current asthma among adults is significantly higher for those without a high school education compared to college graduates or higher ( $p=0.05$ ).

# Prevalence

Figure 10. Prevalence Of Current Asthma Among Adults ( $\geq 18$  years) By Body Mass Index Level, Texas, 2000-2005



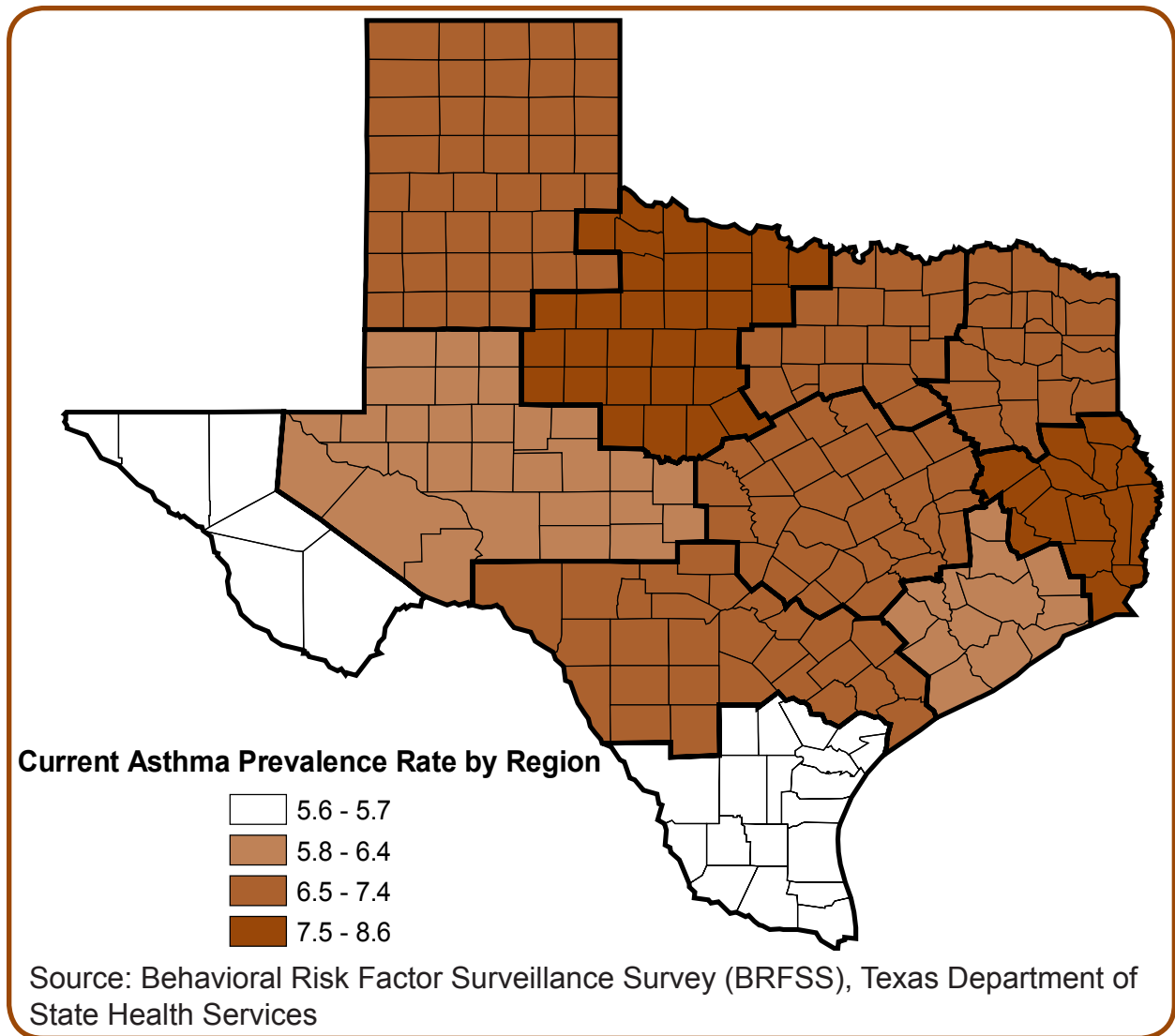
\* Normal: within Recommended Range: BMI < 25; Overweight:  $25.0 \leq \text{BMI} < 29.9$ ; Obese: BMI  $\geq 30$

Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The current asthma prevalence is significantly higher for adults who are obese (8.5%) than those whose BMI are within recommended range (6.5%) ( $p < 0.05$ ).

# Prevalence

Figure 11. Prevalence Of Current Asthma Among Adults ( $\geq 18$  years) By Health Service Region, Texas, 2000-2005



- Current asthma prevalence is lower in the south and the west areas while higher in the north central and the east areas of Texas.

# Quality of Life

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## Behavioral Risk Factor Surveillance System (BRFSS)

This section presents information on asthma management and quality of life, such as symptom frequency, activity limitations, and perception of disease in Texas from 2001-2005. Since 2001, the Texas BRFSS has included questions used to measure the level of asthma control in respondents with current asthma. For this report, seven questions (of the nine questions in the asthma history module) were used to measure the level of asthma control in respondents with current asthma. In order to increase the sample size, multiple years are combined so it is possible to describe the quality of life and disease management for subpopulations with asthma.

To determine asthma management and quality of life, the respondents who answer “yes” with lifetime asthma are asked:

During the past 12 months, how many times did you visit an emergency room or urgent care center because of your asthma?

During the past 12 months, how many times did you see a doctor, nurse or other health professional for urgent treatment of worsening asthma symptoms?

During the past 12 months, how many times did you see a doctor, nurse or other health professional for a routine checkup for your asthma?

During the past 12 months, how many days were you unable to work or carry out your usual activities?

During the past 30 days, how many days did symptoms of asthma make it difficult for you to stay asleep?

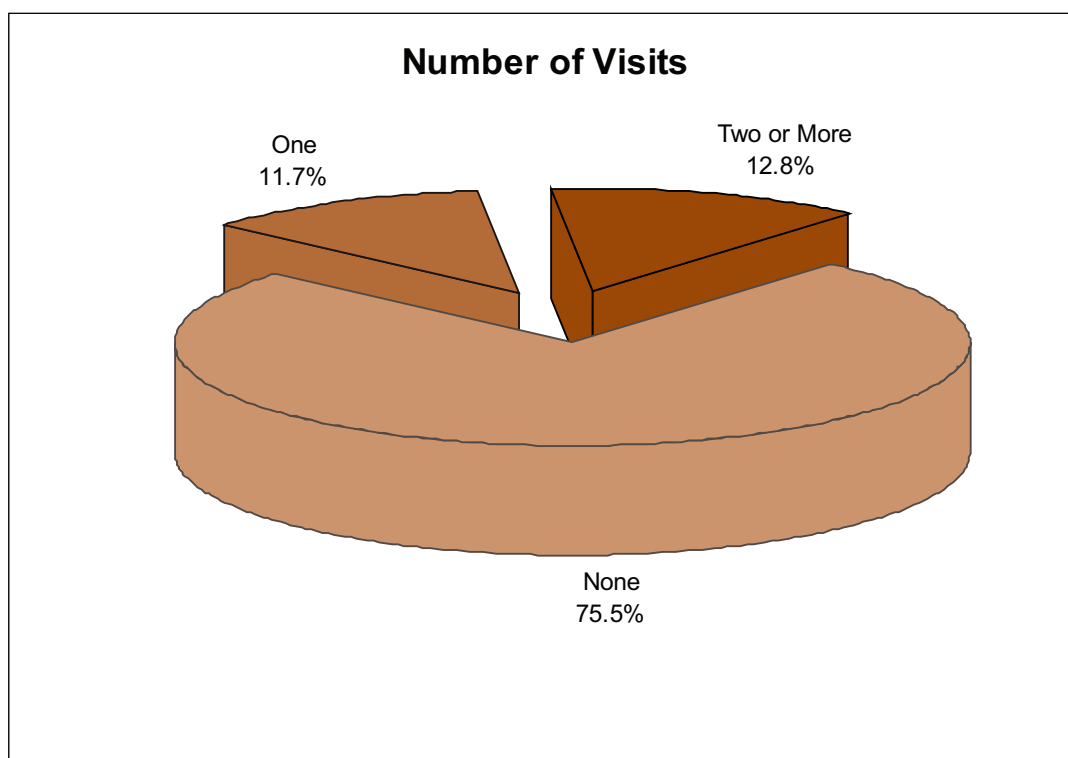
During the past 30 days, how often did you take a prescription asthma medication to prevent an asthma attack from occurring?

During the past 30 days, how often did you use a prescription asthma inhaler during an asthma attack to stop it?



# Quality of Life

Figure 12. Percent Of Adults ( $\geq 18$  years) With Current Asthma That Had Emergency Room Or Urgent Care Center Visits In The Past 12 Months, Texas, 2001-2005

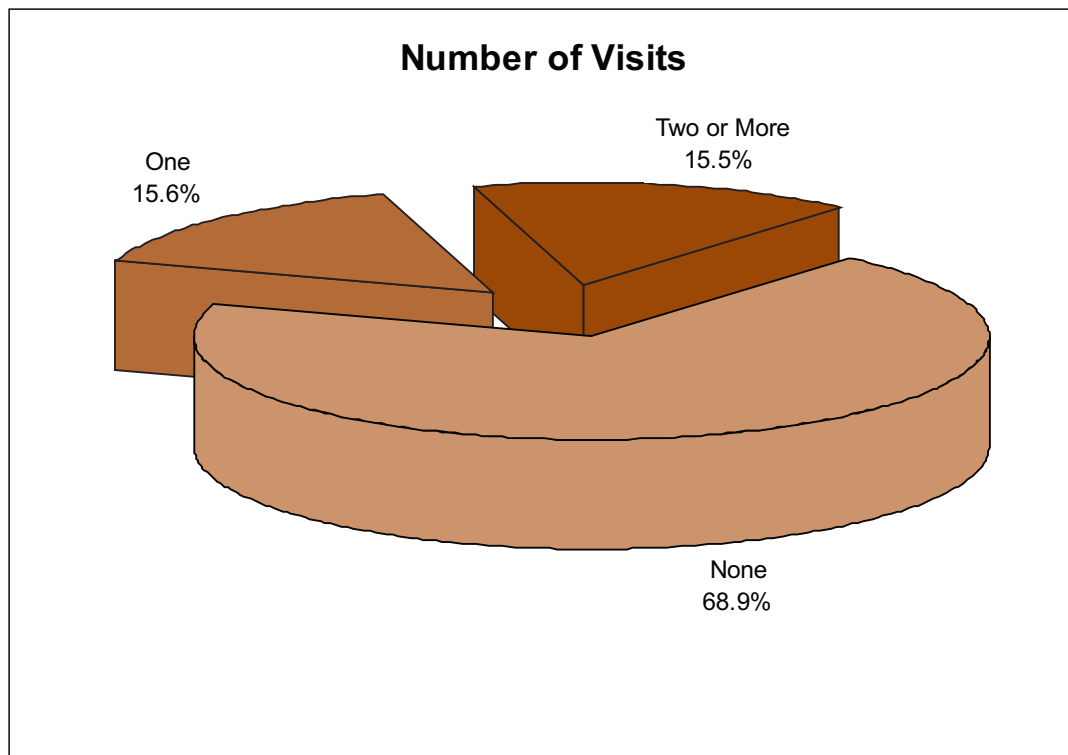


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- Nearly a quarter of Texas adults with current asthma had had at least one visit to the emergency room or urgent care center for urgent treatment of their asthma in the past 12 months.
- The goal of asthma therapy is to have minimal to no emergency department visits for asthma.

# Quality of Life

Figure 13. Percent Of Adults ( $\geq 18$  years) With Current Asthma That Had Been Seen By A Health Professional For Urgent Treatment Of Worsening Asthma Symptoms In The Past 12 Months, Texas, 2001-2005

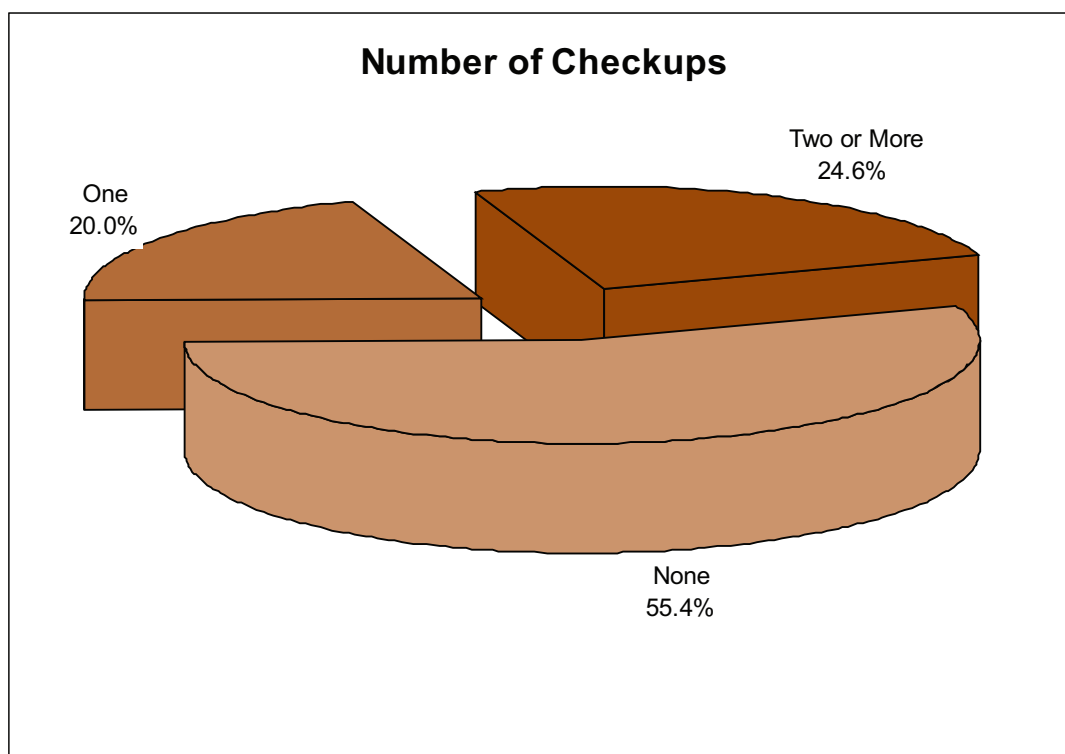


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- Almost a third of Texas adults with current asthma had been seen by a health professional for urgent treatment of worsening asthma symptoms in the past 12 months.

# Quality of Life

Figure 14. Percent Of Adults ( $\geq 18$  years) With Current Asthma That Had Seen A Health Care Professional For A Routine Checkup Of Their Asthma In the Past 12 Months, Texas, 2001-2005

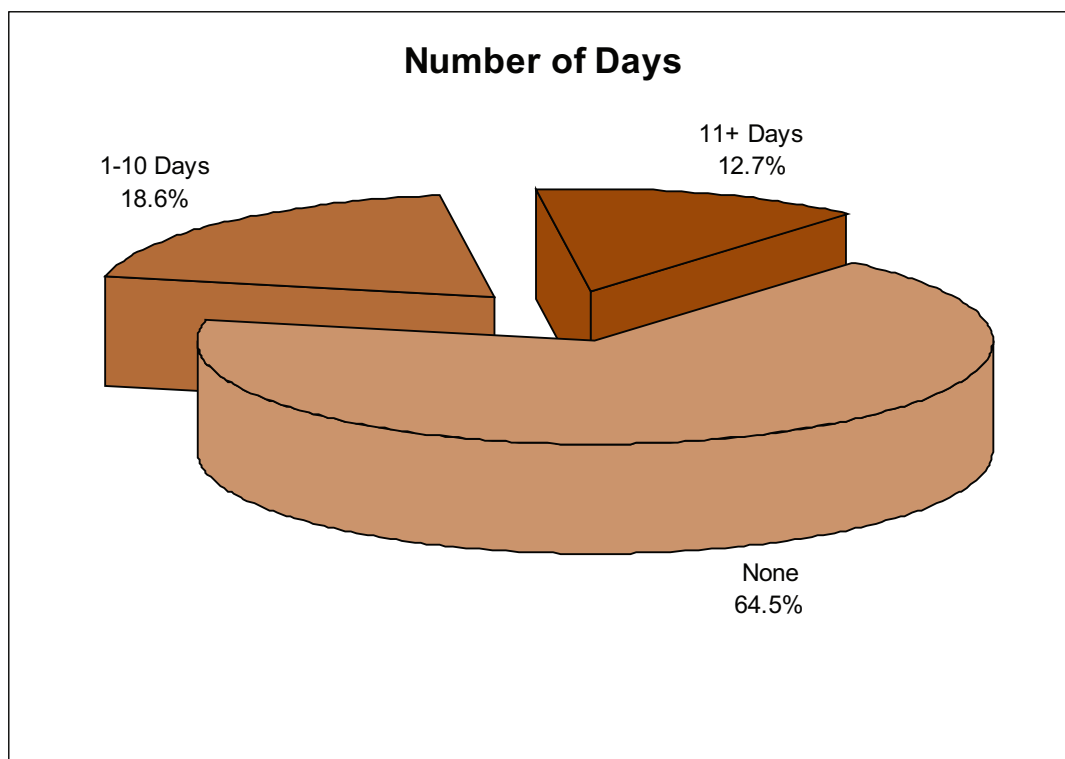


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- Nearly a quarter of Texas adults with current asthma had had 2 or more routine asthma checkups in the past 12 months.
- The American Lung Association recommends that persons with current asthma see a health care professional on a regular basis. Over three quarters of Texas adults with current asthma do not meet this recommendation.

# Quality of Life

Figure 15. Number of Days Unable to Carry Out Usual Activities in the Past 12 Months Among Adults ( $\geq 18$  years) with Current Asthma, Texas, 2001-2005

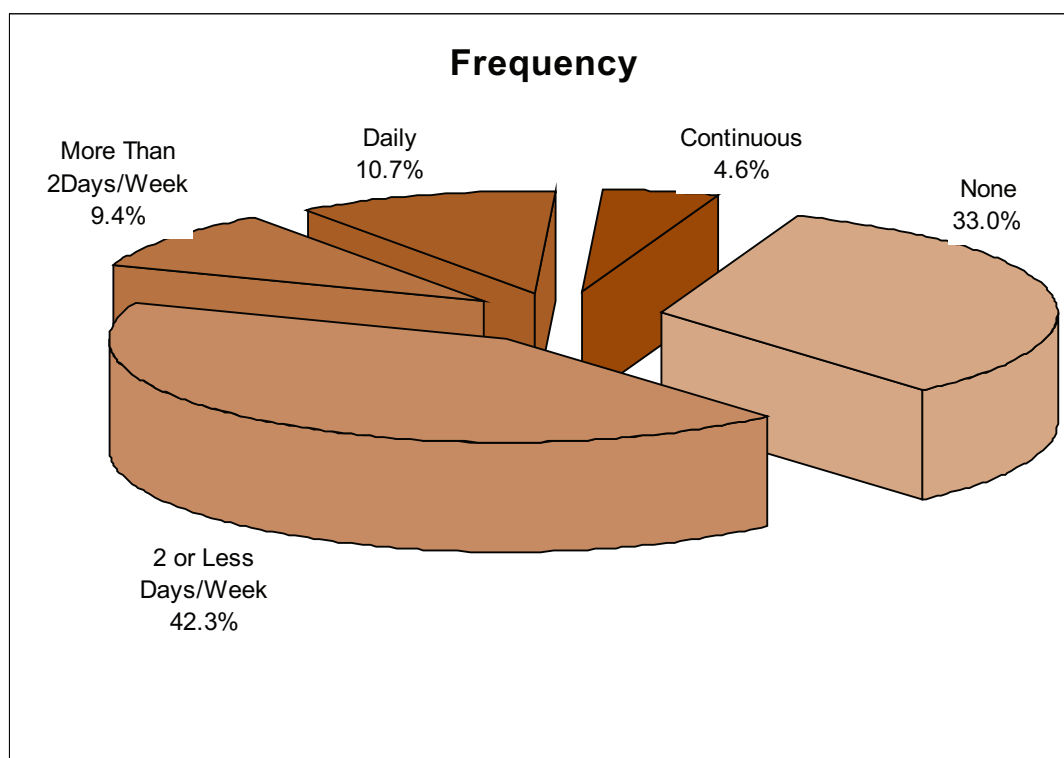


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- The majority (64.5%) of Texas adults with current asthma did not experience any days when they were unable to carry out work or usual activities due to their asthma.
- Nearly one third (29.3%) of Texas adults with current asthma experienced at least one day a year when they were unable to work or carry out their usual activities due to their asthma.

# Quality of Life

Figure 16. Occurrence Of Asthma Symptoms In The Past 30 Days Among Adults ( $\geq 18$  years) With Current Asthma, Texas, 2001-2005

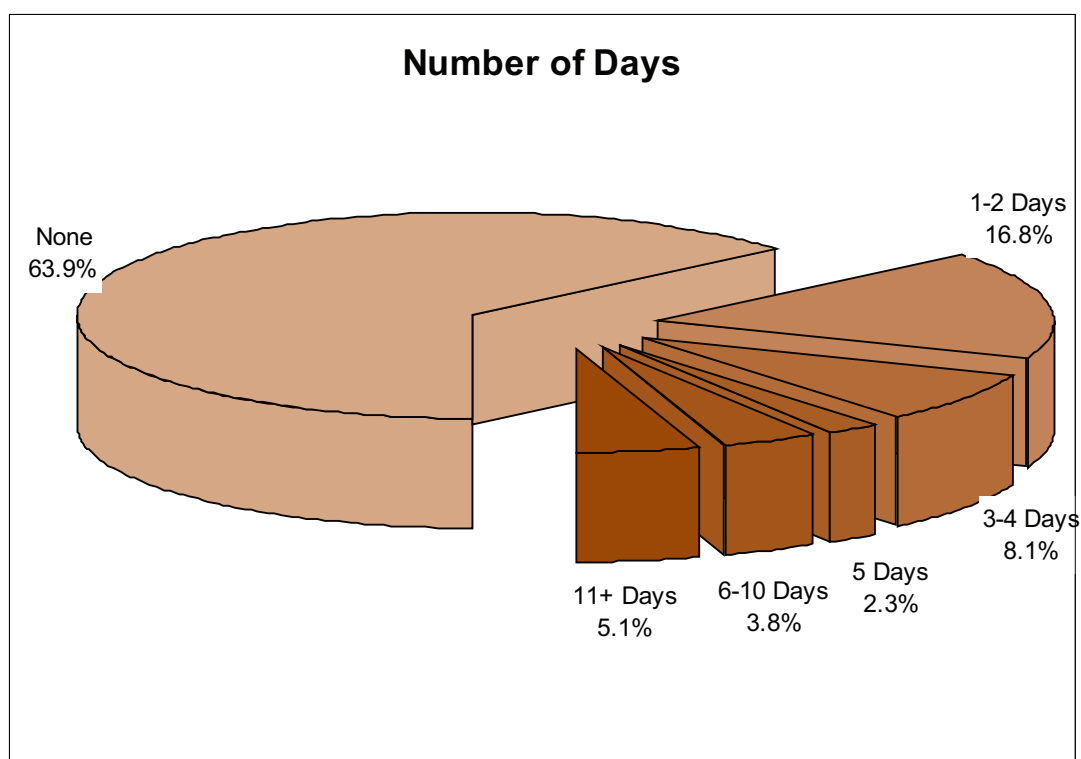


Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- Over two thirds (67.0%) of Texas adults with current asthma experienced asthma symptoms and 15.3% experienced daily or continuous asthma symptoms in the past 30 days.
- According to the American Lung Association, the goal of asthma treatment is to experience no asthma symptoms. Daily or continuous symptoms, therefore, are an indicator of poorly controlled disease.

# Quality of Life

Figure 17. Sleep Disturbed Nights Due To Asthma In The Past 30 Days Among Adults ( $\geq 18$  years) With Current Asthma, Texas, 2001-2005



Source: Behavioral Risk Factor Surveillance Survey (BRFSS), Texas Department of State Health Services

- Over one third (36.1%) of Texas adults with current asthma had experienced sleep-disturbed nights in the past 30 days. Among them, 11.2% had experienced five or more days of sleep disturbed nights.
- According to the American Lung Association, one goal of asthma therapy is to experience no sleep-disturbing symptoms.



# Hospitalizations

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## Texas Health Care Information Collection (THCIC)

Hospitalization data for asthma are obtained from the Texas Health Care Information Collection (THCIC) Inpatient Hospital Discharge Public Use data files. Hospital discharge data have been available in Texas since 1999. The data presented here are from 1999 to 2004.

Since there is no standardized case definition for an asthma hospitalization, the Council for State and Territorial Epidemiologists (CSTE) case definition for a probable asthma hospitalization is used in this report. The CSTE defines an asthma hospitalization as all non-maternal, non-neonatal, and non-transfer hospital records listing asthma, (ICD-9-CM Code: 493.0 – 493.9) as the primary diagnosis. All inpatient hospitalizations are selected from the hospitals dataset when asthma was the primary diagnosis as well as secondary diagnosis for the stay.

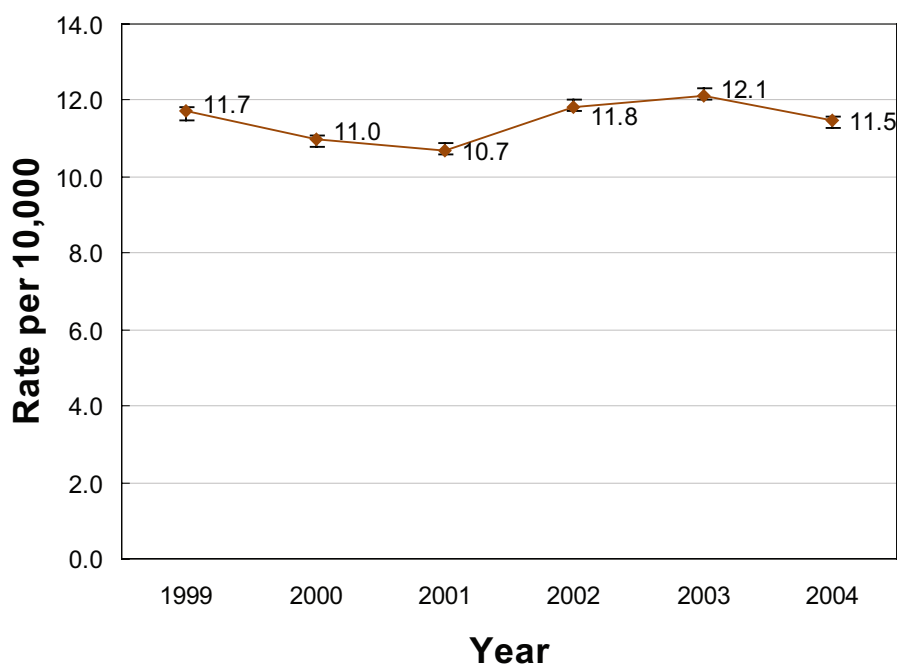
The rates in this report were age adjusted to the 2000 U.S. population so that valid comparisons can be made between populations of different age distributions. Hospital admissions that were missing information (gender, age, and race/ethnicity) were excluded from the analysis.

Limitations of the data:

For conditions such as asthma, an individual can be hospitalized more than once for the same condition during the study period and multiple hospitalizations cannot be distinguished from this data source since the data has been de-identified. Also, these estimates underestimate the true rate of hospitalizations for asthma because some Texas hospitals are exempted from the reporting requirement.

# Hospitalizations

Figure 18. Age-adjusted Rates Of Asthma Hospitalization Per 10,000 Texas Residents By Year, Texas, 1999-2004

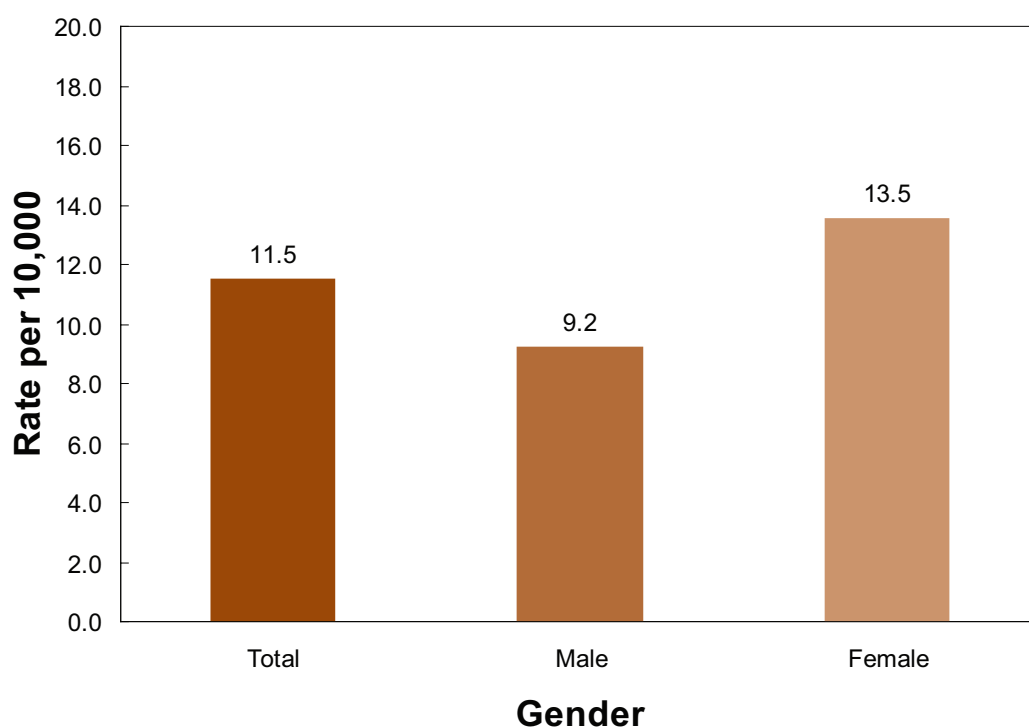


Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- The asthma hospitalization rates for Texas ranged from 10.7 per 10,000 to 12.1 per 10,000 and there was not a consistent trend noted during this period.
- The asthma hospitalization rate in 2004 (11.5 per 10,000) was slightly lower than the previous year.

# Hospitalizations

Figure 19. Rates Of Asthma Hospitalization Per 10,000 Residents By Gender, Texas, 1999-2004

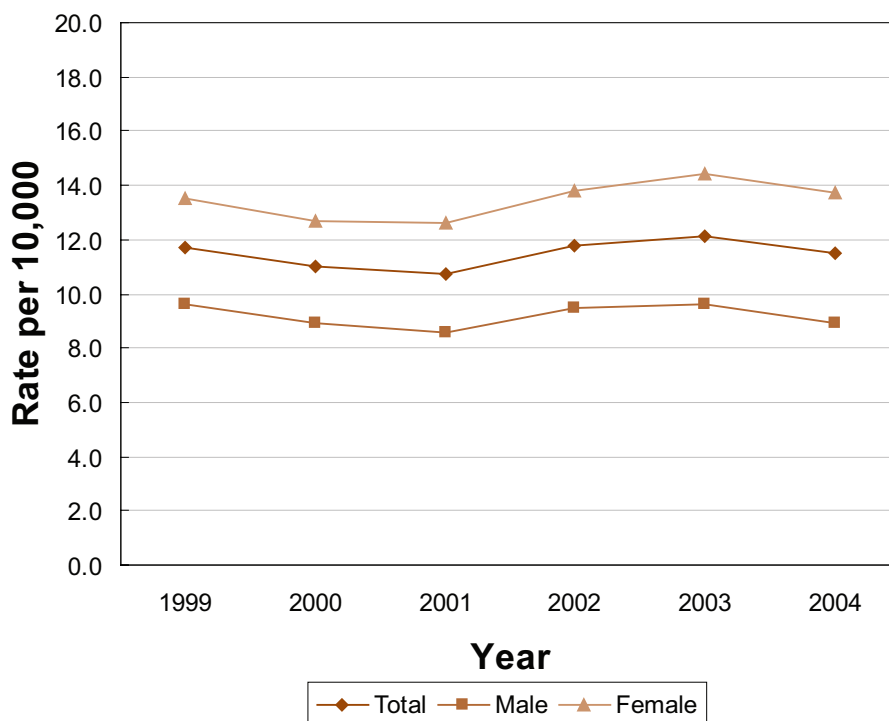


Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- Asthma hospitalization rates were higher among females (13.5 per 10,000 population) than males, (9.2 per 10,000 population).

# Hospitalizations

Figure 20. Rates Of Asthma Hospitalization Per 10,000 Residents By Gender And Year, Texas, 1999-2004

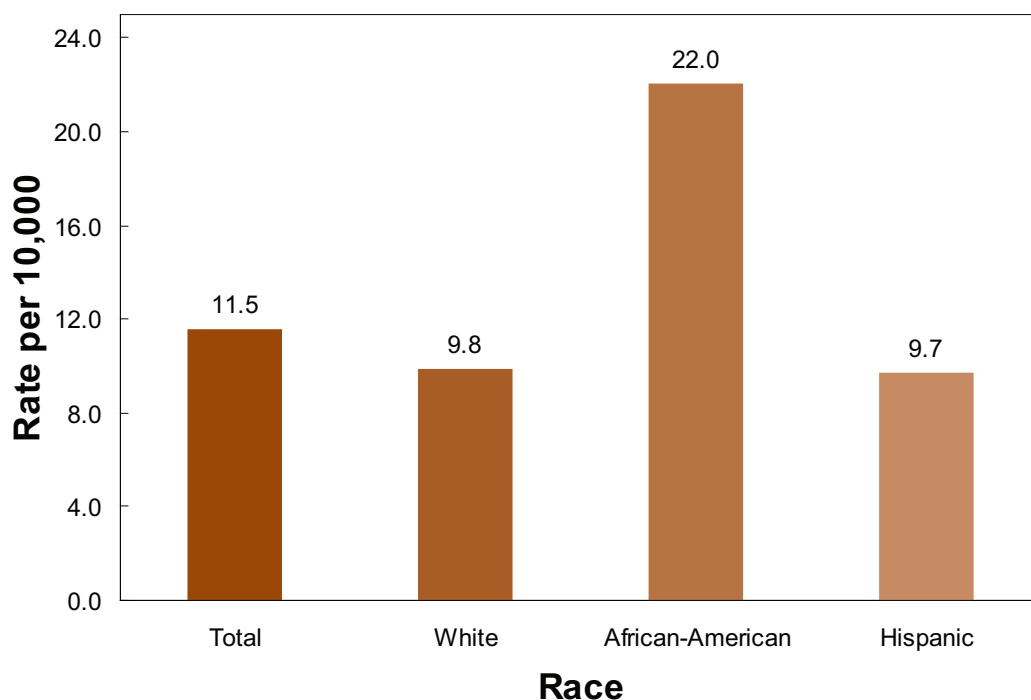


Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- Between 1990 and 2001, asthma hospitalization rates decreased but increased through 2003, followed by another decrease in 2004 for males, females, and all persons combined.

# Hospitalizations

Figure 21. Age-adjusted Rates Of Asthma Hospitalization Per 10,000 Residents By Race, Texas, 1999-2004



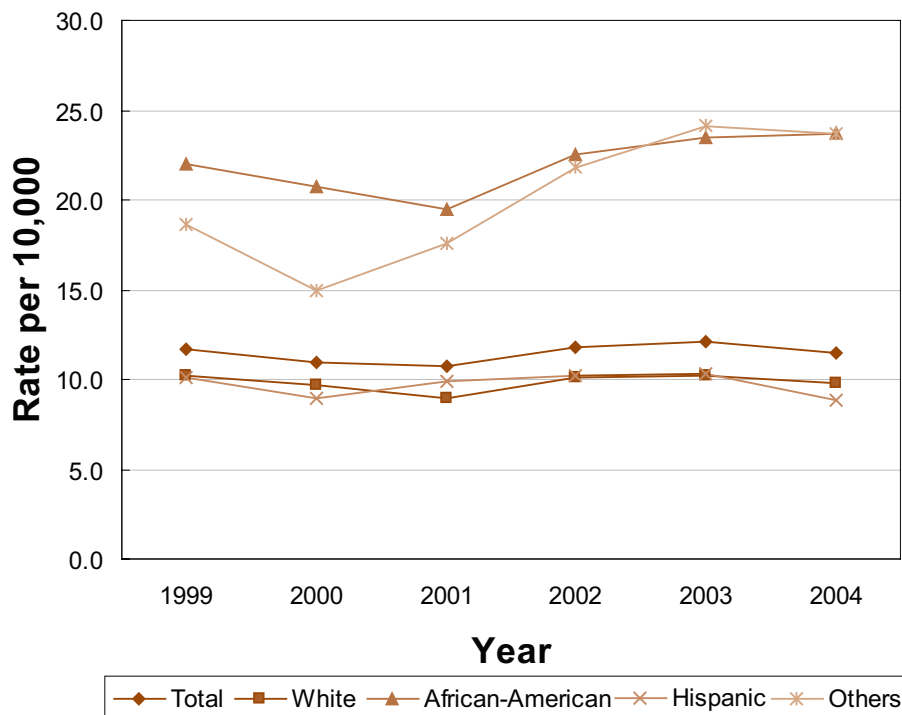
\* Data for other race/ethnic group does not present here because the sample size is too small to compute for comparison.

Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- The asthma hospitalization rate among African-Americans was more than two times higher than Whites and Hispanics in Texas ( $p < 0.05$ ).

# Hospitalizations

Figure 22. Age-adjusted Rates Of Asthma Hospitalization Per 10,000 Residents By Race And Year, Texas, 1999-2004

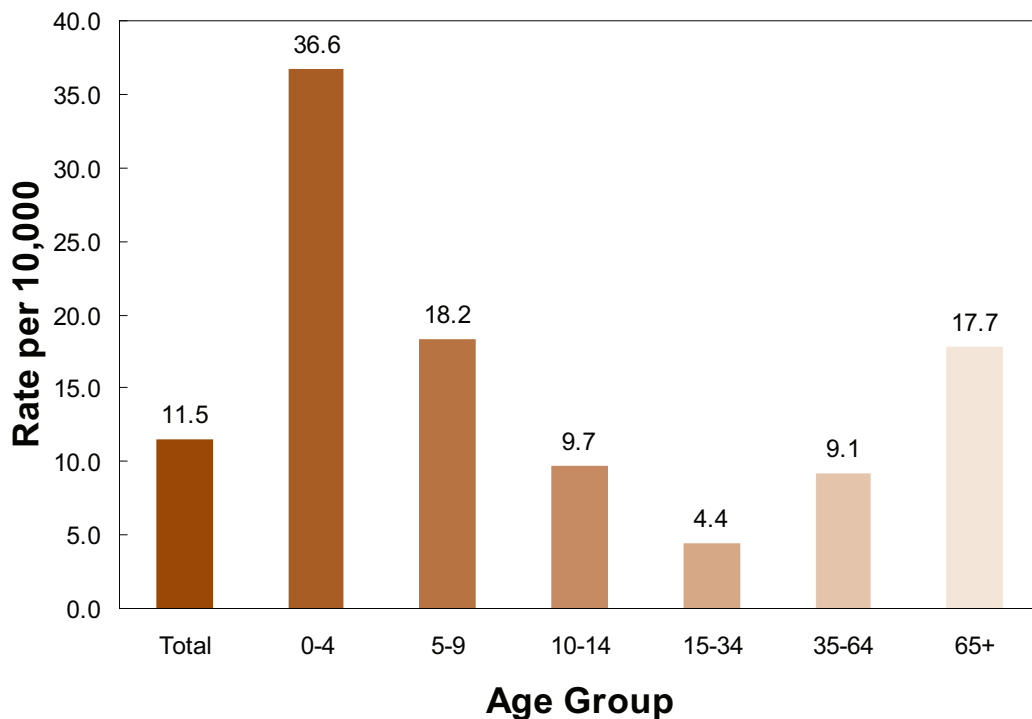


Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- Between 1999 and 2004, there was an overall increase in asthma hospitalization rates in Texas for African-Americans and the Other group.
- There was no significant trend among White and Hispanic groups during this period.

# Hospitalizations

Figure 23. Age-adjusted Rates Of Asthma Hospitalization Per 10,000 Residents By Age Group, Texas, 1999-2004

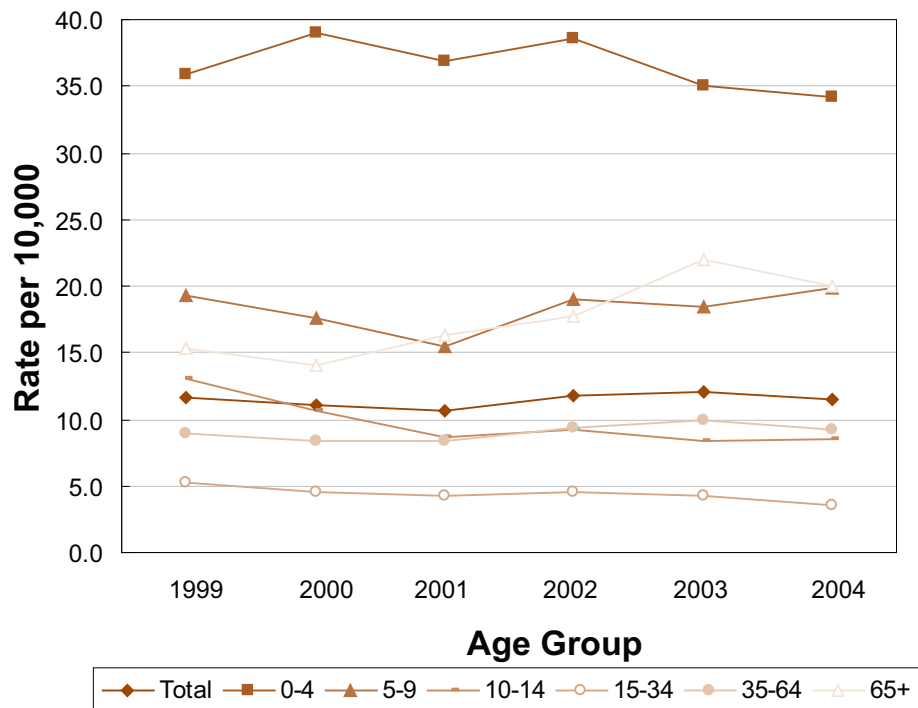


Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- The highest age-specific asthma hospitalization rate was among children ages 0 to 4 years (36.6 per 10,000 population), while the lowest was among young adults aged 15 to 34 years (4.4 per 10,000 population).
- The asthma hospitalization rate increased after age 34.

# Hospitalizations

Figure 24. Age-adjusted rates Of Asthma Hospitalization Per 10,000 Residents By Age Group And Year, Texas, 1999-2004



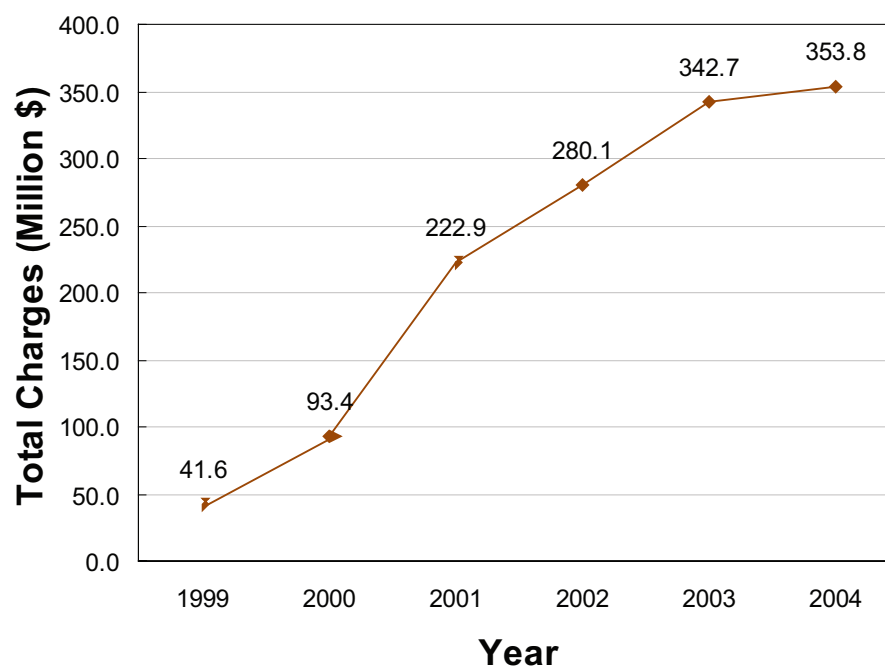
Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- Although a notable decline occurred over the time period, the 0-4 age group had the highest rates of asthma hospitalizations each year compared to all other age groups.
- The 65 and older age group has shown an increase in hospitalization rates through 2003 with a decline in 2004.



# Hospitalizations

Figure 25. Total Charges For Asthma Hospitalization By Year, Texas, 1999-2004

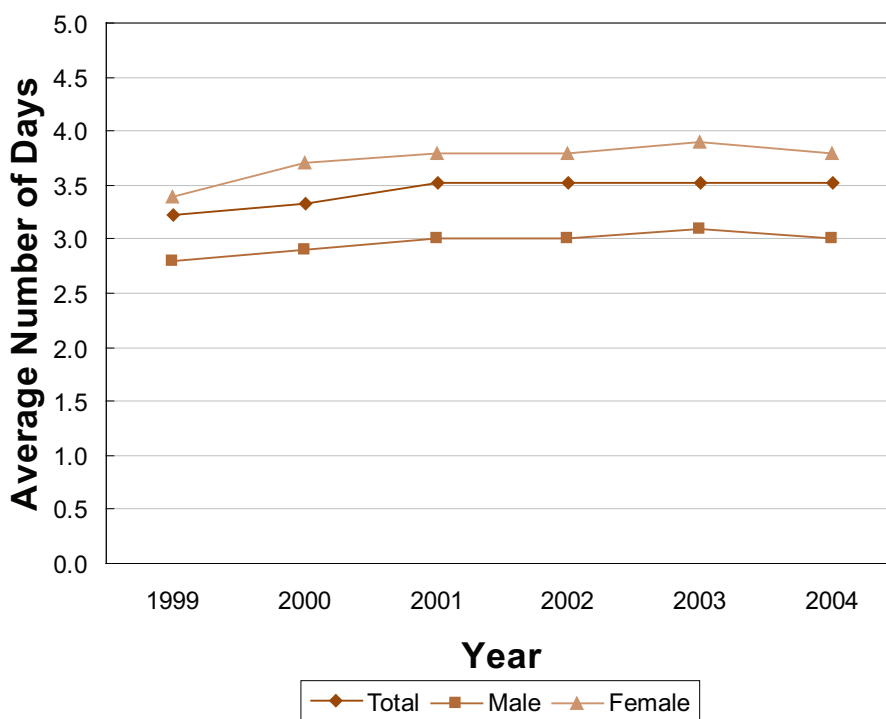


Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- The 2004 total charges for asthma hospitalizations in Texas was over \$353 million.

# Hospitalizations

Figure 26. Average Length Of Stay (LOS) For Asthma Hospitalizations By Gender And Year, Texas, 1999-2004

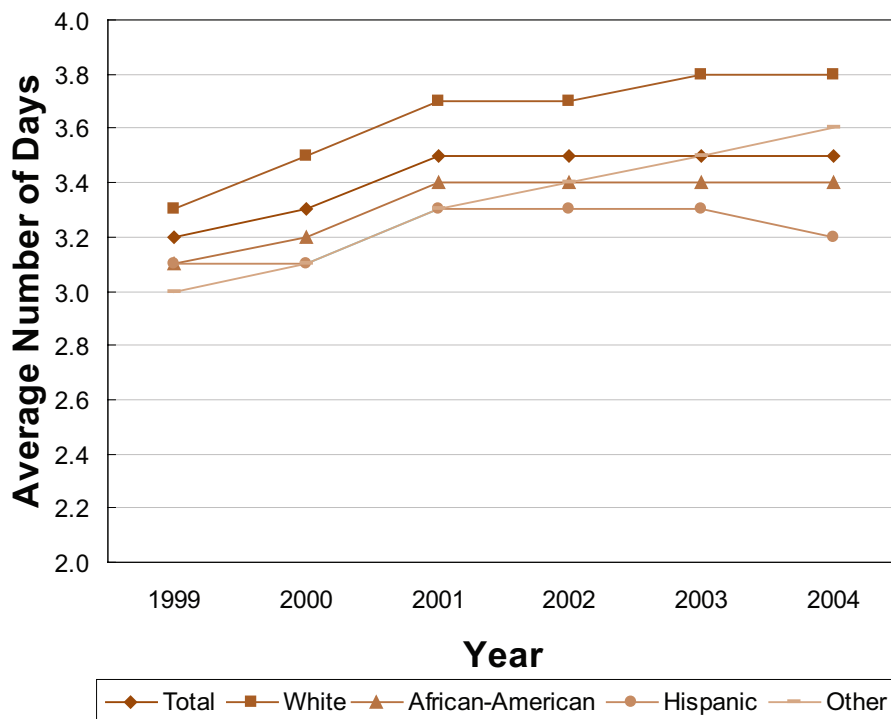


Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- The average LOS for an asthma hospitalization increased slightly between 1999 and 2001 but remained constant thereafter for males, females, and all persons combined.

# Hospitalizations

Figure 27. Average Length Of Stay (LOS) For Asthma Hospitalizations By Race And Year, Texas, 1999-2004

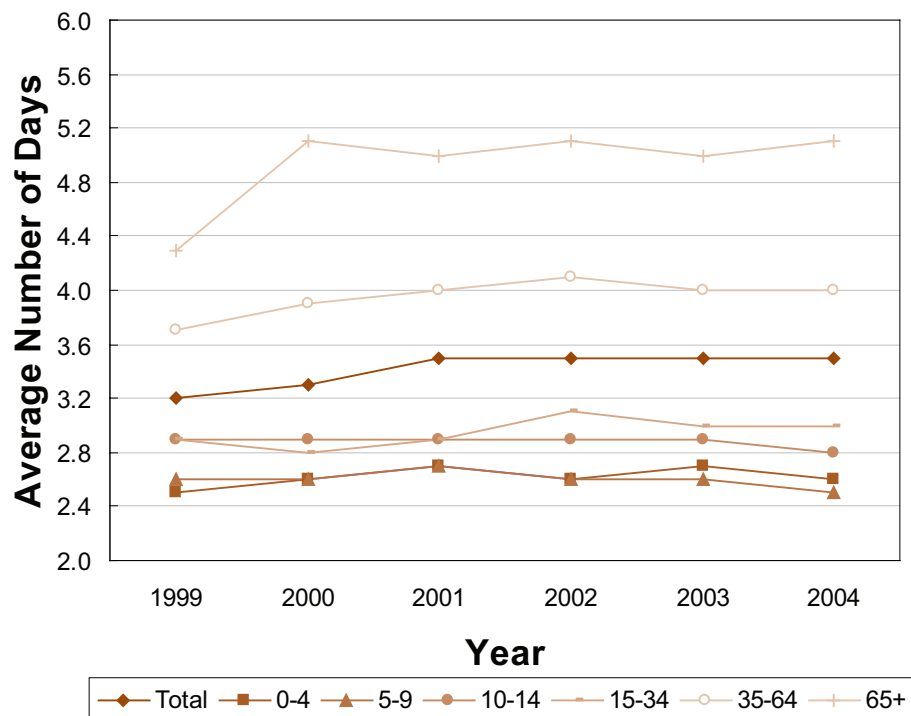


Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- Between 1999 and 2004, the average LOS was highest for Whites, and the average LOS increased from 3.3 to 3.8 days.
- The average LOS for Hispanics increased from 1999 to 2001, but declined in 2004.

# Hospitalizations

Figure 28. Average Length Of Stay (LOS) By Age Group And Year, Texas, 1999-2004



Source: Texas Health Care Information Collection (THCIC), Texas Department of State Health Services

- The average LOS for an asthma hospitalization in Texas generally increased with age.
- The average LOS for an asthma hospitalization increased from 1999 to 2001, and stayed almost constant thereafter for all age groups.

# Mortality

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## Texas Vital Statistics Unit (VSU)

For the purpose of this report, an asthma death is defined as any death for which asthma was listed as the underlying cause. Deaths occurring through 1998 were classified according to ICD Version 9 with ICD-9 codes of 493.0 to 493.9. Deaths occurring in 1999 and later are classified according to ICD Version 10 with ICD-10 codes of J45 and J46.

Mortality data are obtained from the Texas DSHS Vital Statistics Unit. The data represented here is from 1995-2005. Some analyses only include data from 1999 to 2005 because of the incomparable issue caused by the changing of ICD codes.

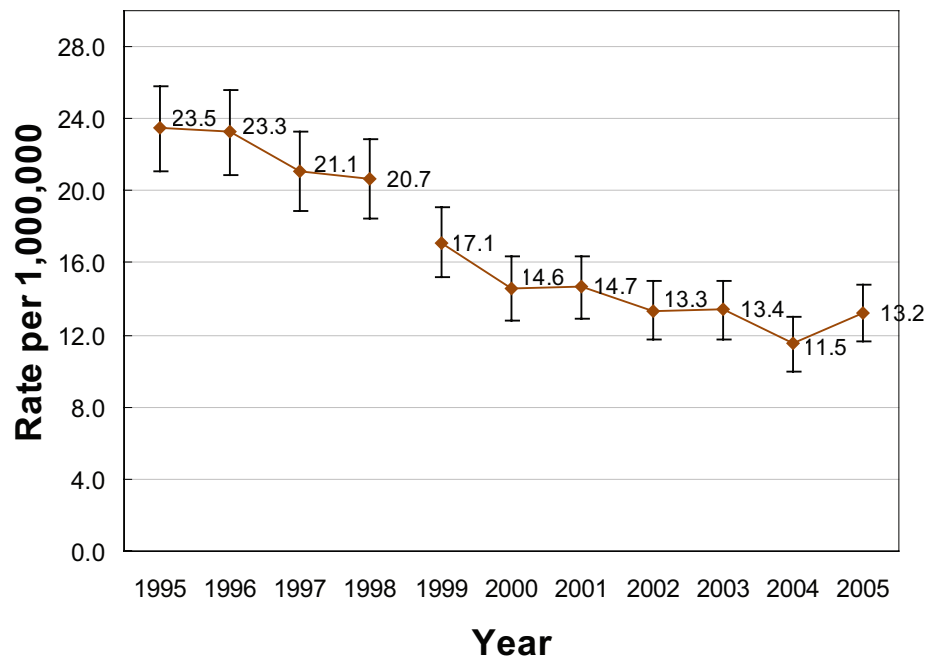
For this report, age-adjusted asthma mortality rates are calculated and presented per 1,000,000 population. Rates are age adjusted so that valid comparisons can be made between populations of different age distributions. Mortality rates for demographic units with a small number of events (less than 5 events) or a small population size (less than 5,000 population) are not calculated because these rates are statistically unstable.

Limitations of the data:

The mortality data from 1999 and later cannot be directly compared with the data from previous years due to the ICD-9 to ICD-10 coding change. Also, the person who completes the “Cause of Death” information on the Texas Certificate of Death determines the data coding.

# Mortality

Figure 29. Age-adjusted Asthma Mortality Rate Per 1,000,000 By Year, Texas, 1995-2005

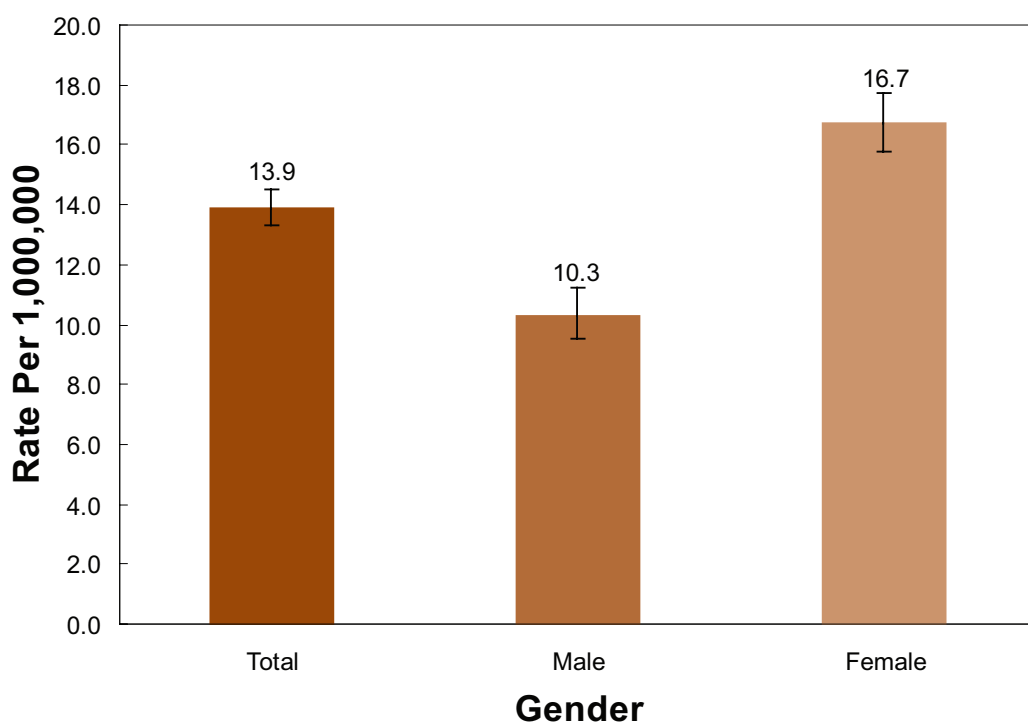


Source: Texas Vital Statistics Unit (VSU), Texas Department of State Health Services

- There was a decreasing trend in the asthma mortality rate from 1995 to 2005 for Texas, although it increased slightly in 2005.

# Mortality

Figure 30. Age-adjusted Asthma Mortality Rate Per 1,000,000 By Gender, Texas, 1999-2005

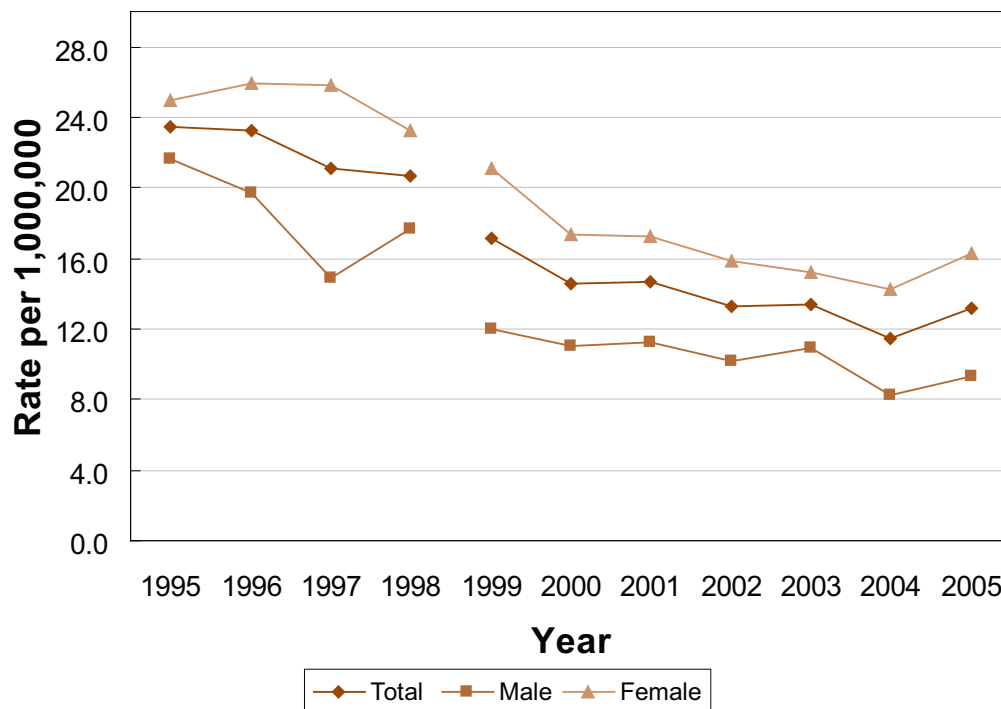


Source: Texas Vital Statistics Unit (VSU), Texas Department of State Health Services

- Asthma mortality rates were significantly higher among females (16.7 per 1,000,000 population) than males (10.3 per 1,000,000 population) ( $p < 0.05$ ).

# Mortality

Figure 31. Age-adjusted Asthma Mortality Rate Per 1,000,000 By Gender And Year, Texas, 1995-2005



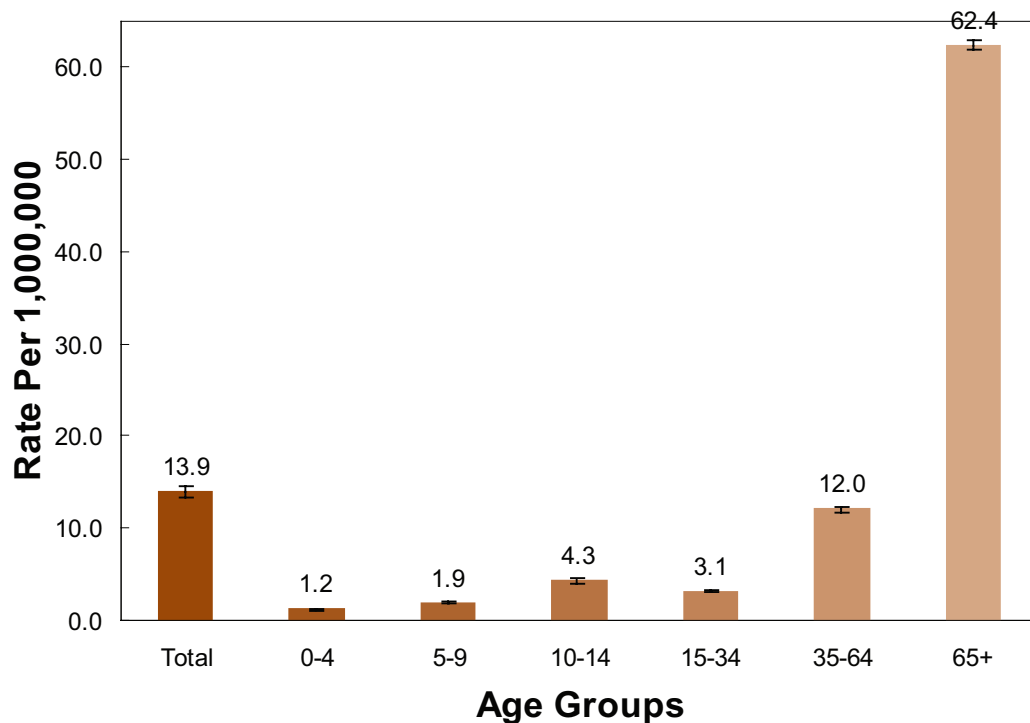
Source: Texas Vital Statistics Unit (VSU), Texas Department of State Health Services

- Overall there was a significant downward trend in Texas asthma mortality rates between 1995 to 2004 for males, females, and all persons combined, although an increase was noted in 2005.



# Mortality

Figure 32. Age-adjusted Asthma Mortality Rate Per 1,000,000 By Age Group, Texas, 1999-2005

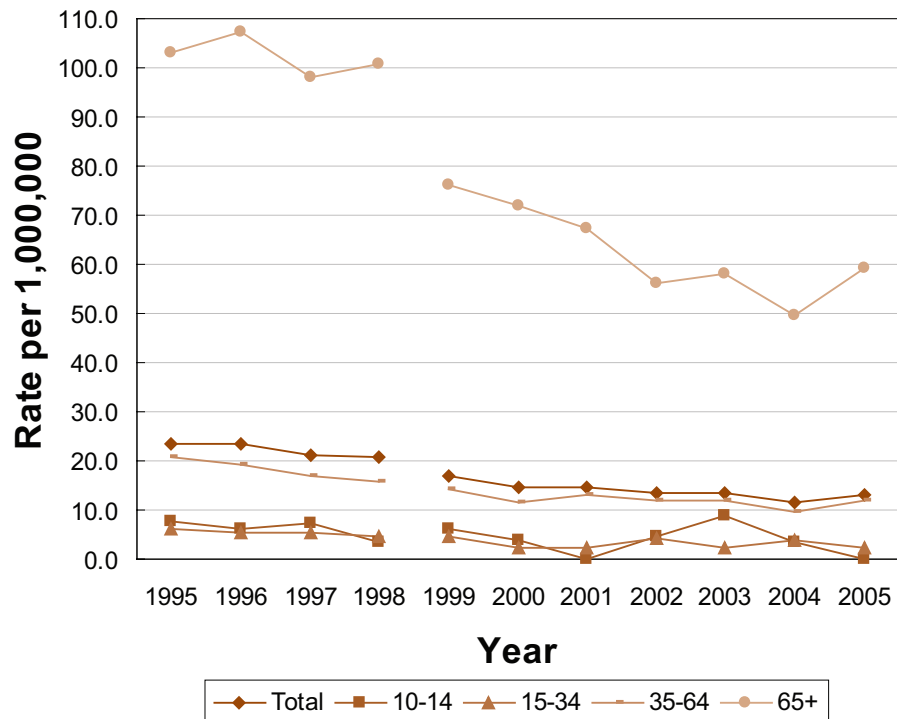


Source: Texas Vital Statistics Unit (VSU), Texas Department of State Health Services

- Asthma mortality rates increased with increasing age from 1999 to 2005.
- The highest asthma mortality rate was among adults 65 years of age or older (62.4 per 1,000,000 population) ( $p < 0.05$ ).

# Mortality

Figure 33. Age-adjusted Asthma Mortality Rate Per 1,000,000 By Age Group And Year, Texas, 1995-2005

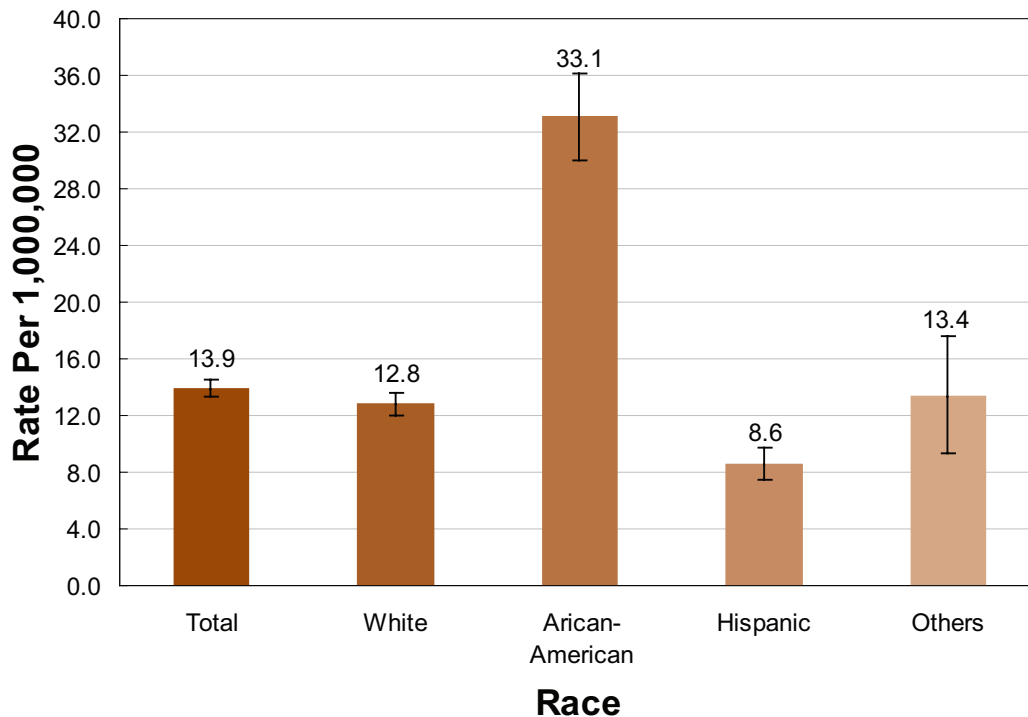


Source: Texas Vital Statistics Unit (VSU), Texas Department of State Health Services

- There was a 52.0 percent decrease in asthma mortality rates among adults aged 65 and older over the time period 1995 to 2004.
- In 2002 and 2003, the 10-14 age group showed an increase in asthma mortality rates compared to 2001.

# Mortality

Figure 34. Age-adjusted Asthma Mortality Rate Per 1,000,000 By Race, Texas, 1999-2005

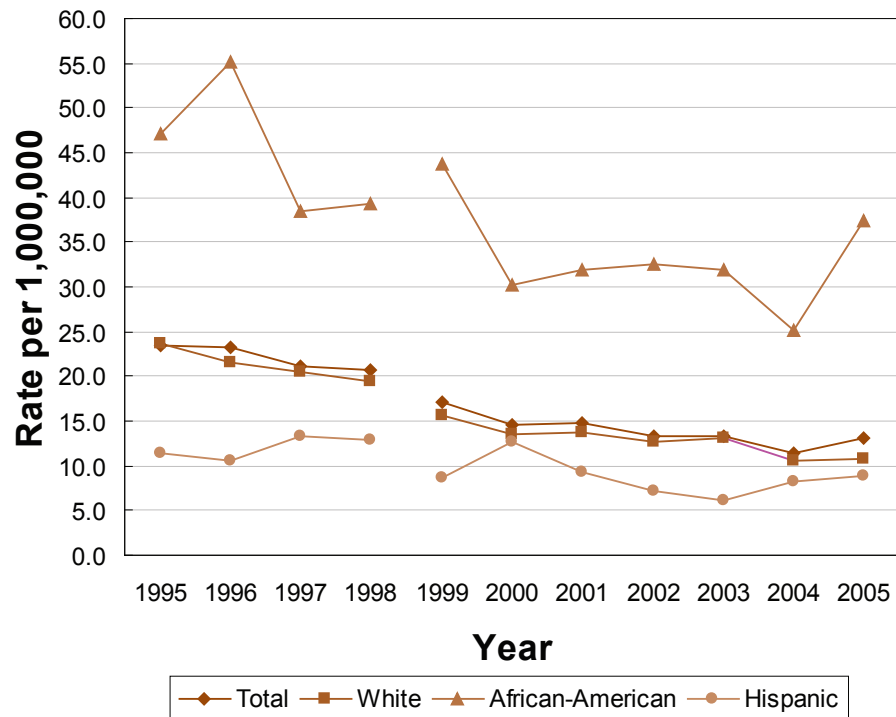


Source: Texas Vital Statistics Unit (VSU), Texas Department of State Health Services

- The mortality rate for African-Americans, 1999 to 2005, was almost three times higher than the rate for Whites and four times higher than the rate for Hispanics ( $p < 0.05$ ).

# Mortality

Figure 35. Age-adjusted Asthma Mortality Rate Per 1,000,000 By Race/Ethnicity And Year, Texas, 1995-2005

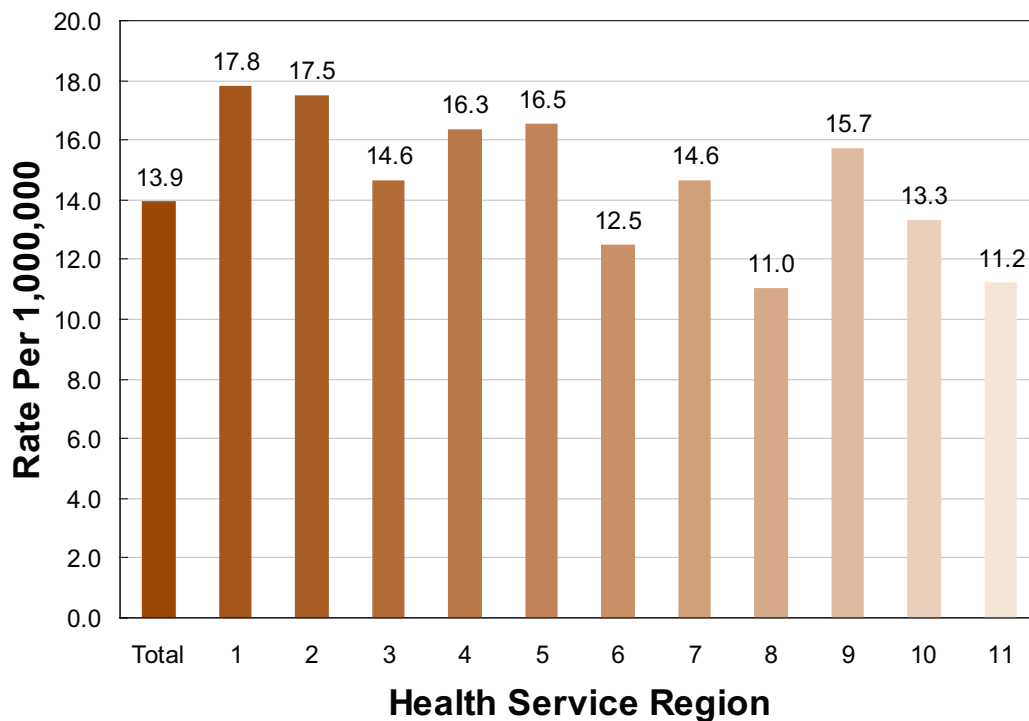


Source: Texas Vital Statistics Unit (VSU), Texas Department of State Health Services

- Asthma mortality rates decreased from 1995 to 2004 for all race/ethnicity groups. The African-American group had the largest decrease (21.9%) from 47.1 to 25.2 per 1,000,000 population.
- There was an increase in asthma mortality rates for all race groups from 2004 to 2005. The African-American group had the largest increase (12.2%) from 25.2 to 37.4 per 1,000,000 population.

# Mortality

Figure 36. Age-adjusted Asthma Mortality Rate Per 1,000,000 By Health Service Region, Texas, 1999-2005



Source: Texas Vital Statistics Unit (VSU), Texas Department of State Health Services

- During this period, the highest asthma mortality rate was seen in Region 1 with a rate of 17.8 per 1,000,000.
- The lowest asthma mortality rate in the Texas was seen in Region 8 with a rate of 11.0 per 1,000,000.

# Healthy People 2010

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## Defining the Healthy People 2010 Objectives

Healthy People 2010 (HP2010) provides a framework for disease prevention for the United States. HP2010 sets national health objectives designed to identify the most significant preventable threats to health, establish national goals to reduce these threats, and to promote and maintain the health of all Americans.

Each goal is achieved by meeting several measurable objectives. This section presents how Texas rates compare to the HP2010 objectives goals for asthma.

### **The Healthy People 2010 Objectives Related to Asthma Outcomes, Management, and Quality of Life:**

**1-9a.** Reduce hospitalization rates for three ambulatory-care-sensitive conditions: pediatric asthma, uncontrolled diabetes, and immunization preventable pneumonia and influenza.

Target: 17.3 asthma hospitalizations per 10,000, less than 18 years of age

#### **24-1.** Reduce asthma deaths.

Targets:

- 1 per 1,000,000, Ages 0 to 4 years
- 1 per 1,000,000, Ages 5 to 14 years
- 2 per 1,000,000, Ages 15 to 34 years
- 9 per 1,000,000, Ages 35 to 64 years
- 60 per 1,000,000, Ages 65 years or older

#### **24-2.** Reduce hospitalizations for asthma.

Targets:

- 25 per 10,000, Ages 0 to 4 years
- 7.7 per 10,000, Ages 5 to 64 years\*
- 11 per 10,000, Age 65 years or older\*

\* Age adjusted to the 2000 U.S. standard population.

**24-3. Reduce emergency department visits for asthma.**

Targets:      80 per 10,000, Ages 0 to 4 years  
                 50 per 10,000, Ages 5 to 64 years  
                 15 per 10,000, Ages 65 years or older

**24.4. Reduce activity limitations among persons with asthma.**

Target:      10%\*  
                 \* Age adjusted to the 2000 U.S. standard population.

**24.5. Reduce the number of school or workdays missed by persons with asthma due to asthma.**

Target:      No target identified; Objective still under development

**24.6. Increase the proportion of persons with asthma who receive formal patient education, including information about community and self-help resources, as an essential part of the management of their condition.**

Target:      30%\*  
                 \* Age adjusted to the 2000 U.S. standard population.

**24-7. Increase the proportion of persons with asthma who receive appropriate asthma care according to the National Asthma Education and Prevention Program (NAEPP) Guidelines. Measured as persons with asthma who receive:**

- written asthma management plans from a health care provider,
- instruction on how to use a prescribed inhaler properly,
- education about recognizing early signs & symptoms of asthma episodes and how to respond properly, with lessons on peak flow monitoring for those using daily therapy,
- medication regimens that prevent the need for more than 1 canister of short acting inhaled beta agonists per month for relief of symptoms,
- follow-up medical care for long-term management after a hospitalization due to asthma,
- assistance with assessing and reducing exposure to environmental risk factors.

Target:      No target identified; Objective still under development

**Note:**

**Objective 24-3:** Texas does not have data to compute asthma emergency department visits to compare to Healthy People 2010 targets.

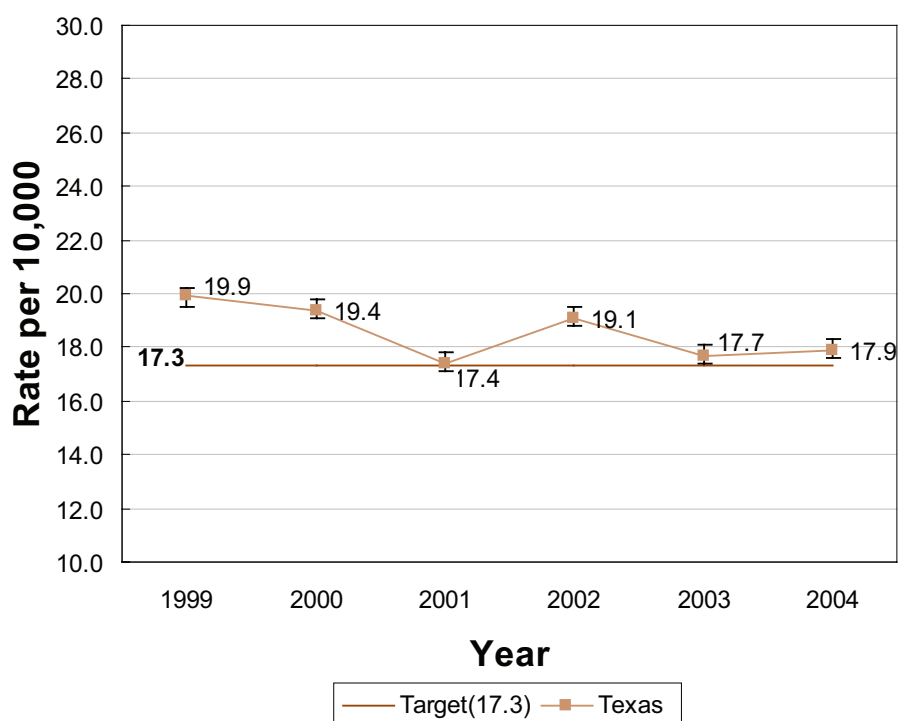
**Objective 24-4:** Texas does not have data to compute the proportion of all persons with asthma that visit experience activity limitations to compare to Healthy People 2010 targets.

**Objective 24-5:** This objective does not have a developmental objective or an objective target, therefore no comparisons can be made with Texas and Healthy People 2010 targets.



# Healthy People 2010

**Figure 37: Rate (per 10,000) of Asthma Hospitalization Compared to Healthy People 2010 Target for Objective 1-9a, for Children (<18 Years) , Texas, 1999-2004**



Data Source: Texas Health Care Information Collection (THCIC), Department of State Health Services, 1999-2004

- From 1999 to 2004, there was a overall decline in asthma hospitalization rates among children in Texas, although rates have still not achieved the Healthy People 2010 target rate of 17.3.

# Healthy People 2010

**Table 1: Rate (per 1,000,000) of Asthma Mortality by Age Group Compared to Healthy People 2010 Targets for Objective 24-1, Texas, 1999 to 2004**

	0 to 4 Years		5 to 14 Years		15 to 34 Years		35 to 64 Years		65+ Years	
	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count
1999	0.0	*	4.4	14	4.6	28	14.3	102	76.2	153
2000	0.0	*	2.4	8	2.4	15	11.7	88	71.9	149
2001	0.0	*	2.1	7	2.5	16	13.0	101	67.4	142
2002	0.0	*	2.7	9	4.2	28	11.9	95	56.1	120
2003	0.0	*	5.4	18	2.2	15	12.1	98	58.0	126
2004	0.0	*	2.7	9	3.8	26	9.6	80	49.6	110
Target	1.0		1.0		2.0		9.0		60.0	

\* Mortality count was too small to calculate an age-specific mortality rate.

Data Source: Texas Vital Statistics Units (VSU), Department of State Health Services, 1999-2004

- For adults, 65 years and older, asthma mortality rates from 2002 to 2004 met the Healthy People 2010 target rate of 60 per 1,000,000 while all other age groups did not achieve their Healthy People 2010 target.

# Healthy People 2010

**Table 2: Rate (per 10,000) of Asthma Hospitalization by Age Group Compared to Healthy People 2010 Targets for Objective 24-2, Texas, 1999 to 2004**

	0 to 4 Years		5 to 64 Years		65+ Years	
	Rate	Count	Rate	Count	Rate	Count
1999	35.9	6,104	6.7	14,753	15.3	3,075
2000	39.0	6,343	6.0	13,755	14.0	2,905
2001	36.9	6,098	5.6	13,216	16.3	3,445
2002	38.6	6,520	6.3	15,175	17.8	3,804
2003	35.0	6,111	6.3	15,398	22.0	4,782
2004	34.2	6,160	6.0	14,831	20.0	4,445
Target	25.0		7.7		11.0	

Data Source: Texas Texas Vital Statistics Units (VSU), Department of State Health Services, 1999-2004

- Since 1999, annual asthma hospitalization rates for the 5-64 year old age group were below the Healthy People 2010 target rate of 7.7, while the 0-4 and 65+ age groups did not achieve their Healthy People 2010 target rates of 25.0 and 11.0, respectively.

# Appendix A.

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## Technical Notes

### Acronyms

BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
DSHS	Texas Department of State Health Services
HEDIS	Health Plan Employer Data and Information Set
LOS	Length of Stay
THCIC	Texas Health Care Information Collection
VSU	Vital Statistics Unit

### Report Terminology

**Age-Adjusted Rate** - An age-adjusted rate is a weighted average of age group specific rates in the population under study.

**Confidence Interval** - A confidence interval is a measure of the precision of an estimate. The wider the interval, the less precise the estimate. The interpretation of the 95% means there is a 95% chance that the true value of the estimate lies within the range of the interval.

**Current Asthma Prevalence** - The proportion of the Texas population that reports currently having asthma. The current asthma population is a subset of the population that has ever been diagnosed with asthma.

**Lifetime Asthma Prevalence** - The proportion of the Texas population that has ever been diagnosed with asthma.

**Prevalence** - Prevalence is the proportion of people in a population who have a specific disease at a point in time or a given time period.

# Appendix B.

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## Data Sources

Name: **Texas Behavioral Risk Factor Surveillance System**

Acronym: BRFSS

Purpose: The Texas BRFSS is a source of estimates of the prevalence of certain health behaviors, conditions, and practices associated with leading causes of death.

History: Texas has conducted the BRFSS survey since 1985. Asthma related questions were added to the Texas survey in 1999.

Methodology: Annual estimates are based on data collected from a random-digit dial telephone survey of a sample of Texas households. The data is a population based representative sample of Texas residents. The data is weighted to represent estimates for the general adult population. BRFSS interviewers use a Computer Assisted Telephone Interviewing (CATI) system, which provides the interviewer with prompts. The interviewer types the respondent's responses directly onto the computer screen, providing quality control and minimizing interviewer error.

Population: A record is a completed telephone interview. The selected respondent must be a Texas resident, 18 years of age or older who lives in a private residence and has a telephone. One randomly selected adult from a household is interviewed.

Asthma Data: The BRFSS has two questions dedicated to estimating asthma prevalence for the general population of adults. In additions to the core questions, the Texas BRFSS has included the asthma module questions which include information about child prevalence, adult history, and management/control.

Additional Information: For more information about the BRFSS, please visit:  
<http://www.cdc.gov/brfss/>

# Appendix B.

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## Data Sources

Name: **Texas Health Care Information Collection**

Acronym: THCIC

Purpose: The THCIC is a source of hospital admissions and billing charges from all state licensed hospitals.

History: The Texas Health Care Information Council (THCIC) was created by Chapter 108 of the Texas Health and Safety Code (THSC) and was responsible, under Sections 108.011 through 108.0135, for collecting hospital discharge data from all state licensed hospitals except those that are statutorily exempt from the reporting requirement.

Methodology: The THCIC receives hospital discharge data from all state licensed hospitals quarterly. At the end of each year, the compiled data are available for purchase in a Public Use Data File (PUDF). The PUDF contains patient-level information for inpatient hospital stays. These data are extracted from DSHS's Hospital Discharge Database (HDD). Data not available in the PUDF, excluding confidential data protected by §108.0135, Health and Safety Code, are available for research purposes with the approval of the THCIC Scientific Review Panel (SRP).

Asthma Data: The PUDF covers both adult and child Texans who have an inpatient hospitalization due to asthma. Information such as, but not limited to demographic, average length of stay, and hospital charges are included in the system.

Additional Information: For more information about the THCIC, please visit: <http://www.dshs.state.tx.us/thcic/>

# Appendix B.

## Data Sources

Name: **Texas Center for Health Statistics Vital Statistics Unit**

Acronym: VSU

Purpose: The VSU is a source of demographic data on births, deaths, fetal deaths, abortions, marriages, and divorces. The team also responds to statistical data requests and develops the Texas Vital Statistics Annual Report.

Methodology: Each year, the Vital Statistics Unit (VSU) and the Center for Health Statistics (CHS) coordinate their efforts to collect, enter, and edit vital statistics data for Texas. After the data are edited, staff perform analyses and create tables on various topics to produce the Texas Vital Statistics Annual Report.

Population: The Texas Vital Statistics includes records for births or deaths that have occurred in Texas from 1903 to the present.

Asthma Data: Asthma mortality data are obtained from the information on the Texas Certificate of Death according to the appropriate ICD-9 code.

Additional Information: For more information about the VSU, please visit:  
<http://www.dshs.state.tx.us/CHS/VSTAT/>

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